

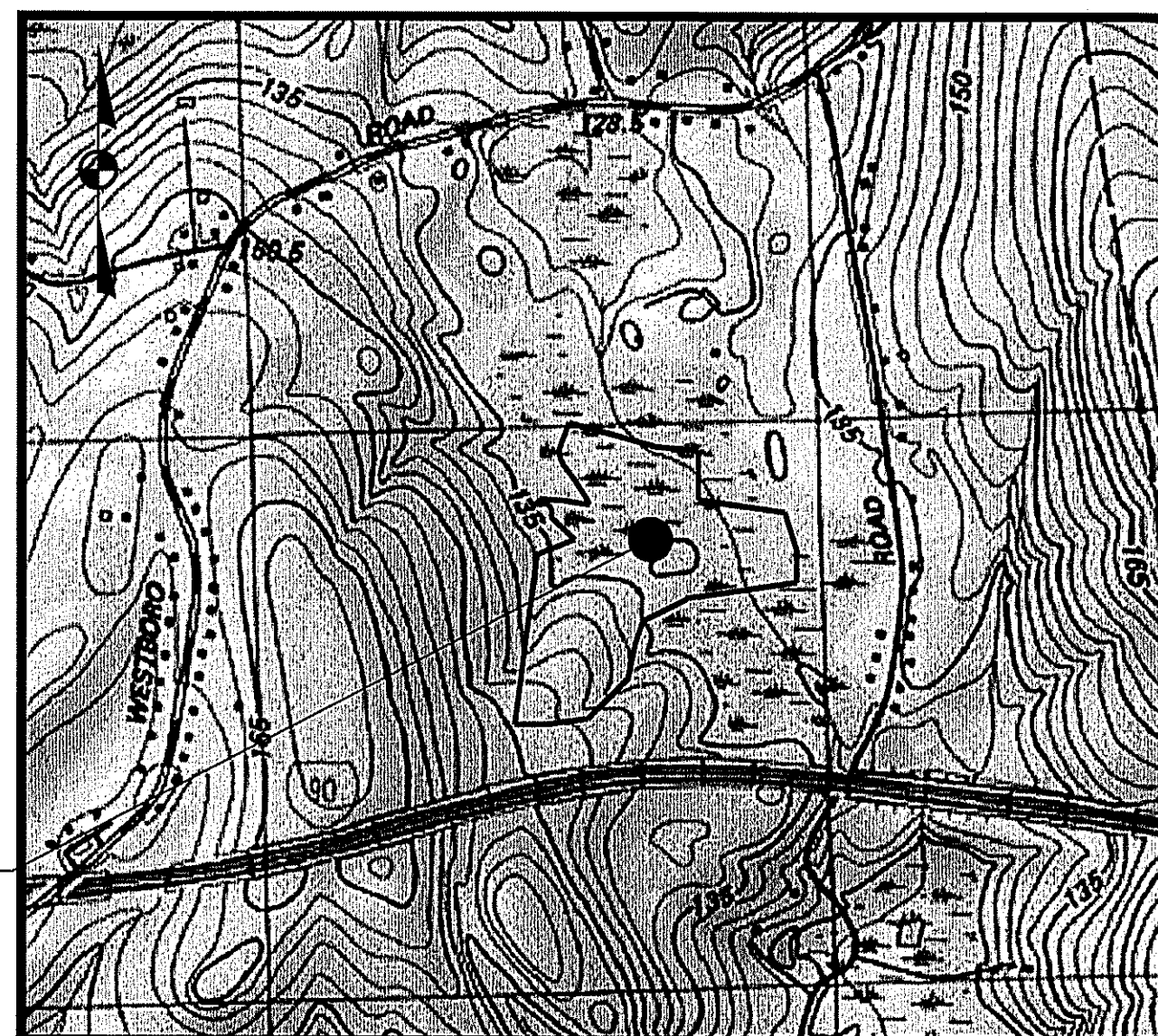
Definitive Conventional Subdivision Plans

June 10, 2016 (Revised January 9, 2017)

Estates at Bull Meadow

North Grafton, Massachusetts 01536

PROJECT SITE



SCALE: 1"=1000'±
ZONING DISTRICT: R40

Applicant:

Bull Meadow, LLC.
2 Rachel Road
Boylston, MA 01505
(978)833-4747

Record Owner:

Bull Meadow, LLC.
Mr. Gordon Lewis, Manager
2 Rachel Road
Boylston, MA 01505
(978) 833-4747

Civil Engineer:

McCarty Engineering, Inc.
42 Jungle Road
Leominster, MA 01453
(978) 534-1318

Surveyor:

Whitman & Bingham Associates, LLC.
510 Mechanic Street
Leominster, MA 01453
(978) 537-5296

Wetland Consultant:

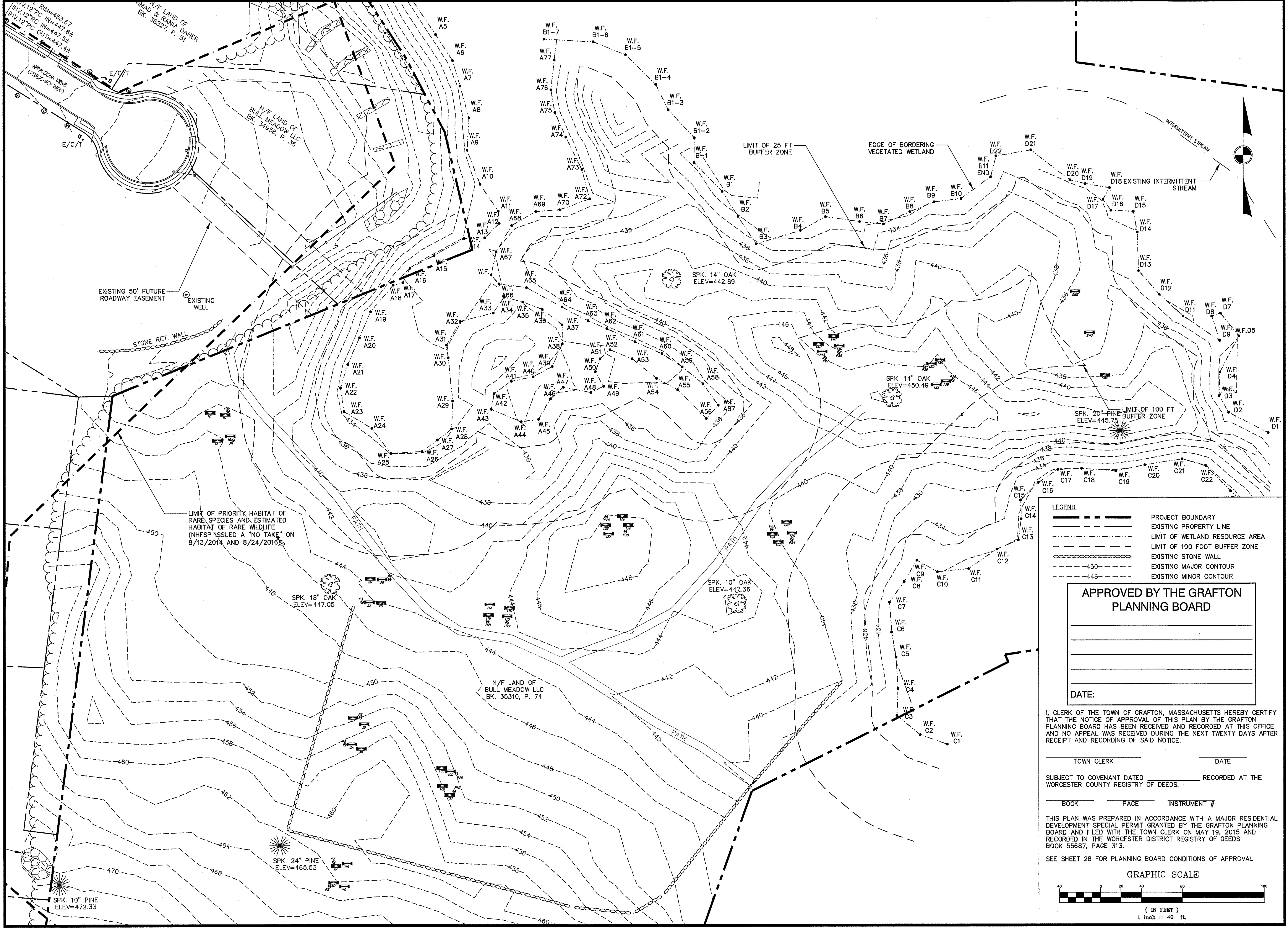
EcoTec, Inc.
102 Grove Street
Worcester, MA 01605
(508)752-9494



Sheet	Sheet Title
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Cover Sheet

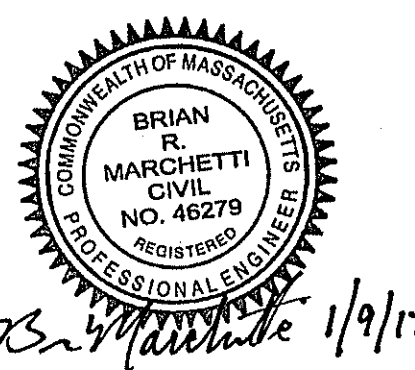
1	Existing Conditions Survey (1 of 2)	9	Layout and Materials Plan (3 of 3)	17	Roadway and Utility Profiles (4 of 4)	25	Construction Details (3 of 4)
2	Existing Conditions Survey (2 of 2)	10	Grading and Drainage Plan (1 of 2)	18	Water Main Extension Plan	26	Construction Details (4 of 4)
3	Lotting Plan (1 of 4)	11	Grading and Drainage Plan (2 of 2)	19	Erosion Control Plan (1 of 2)	27	Stormtech Detail Sheet
4	Lotting Plan (2 of 4)	12	Utility Plan (1 of 2)	20	Erosion Control Plan (2 of 2)	28	O&M Plan
5	Lotting Plan (3 of 4)	13	Utility Plan (2 of 2)	21	Wetland Crossing and Replication Plan	29	Conditions of Approval
6	Lotting Plan (4 of 4)	14	Roadway and Utility Profiles (1 of 4)	22	Construction Phasing Plan		
7	Overall Subdivision Plan (1 of 3)	15	Roadway and Utility Profiles (2 of 4)	23	Construction Details (1 of 4)		
8	Layout and Materials Plan (2 of 3)	16	Roadway and Utility Profiles (3 of 4)	24	Construction Details (2 of 4)		



NOT FOR CONSTRUCTION
THESE PLANS WERE PREPARED FOR THE PURPOSE OF OBTAINING STATE AND LOCAL PERMITS AND ARE NOT INTENDED TO BE USED AS CONSTRUCTION DOCUMENTS.

PREPARED FOR:
BULL MEADOW, LLC.
2 RACHEL ROAD
BOYLSTON, MA 01505

3	01/09/2017	NO CHANGES
2	11/22/2016	TOWN COMMENTS
1	10/11/2016	TOWN COMMENTS
No.	Date	Revision



Drawn By: BRM Designed By: BRM Checked By: JSCM

- LEGEND
- PROJECT BOUNDARY
 - EXISTING PROPERTY LINE
 - LIMIT OF WETLAND RESOURCE AREA
 - LIMIT OF 100 FOOT BUFFER ZONE
 - EXISTING STONE WALL
 - EXISTING MAJOR CONTOUR
 - EXISTING MINOR CONTOUR

APPROVED BY THE GRAFTON PLANNING BOARD

DATE:

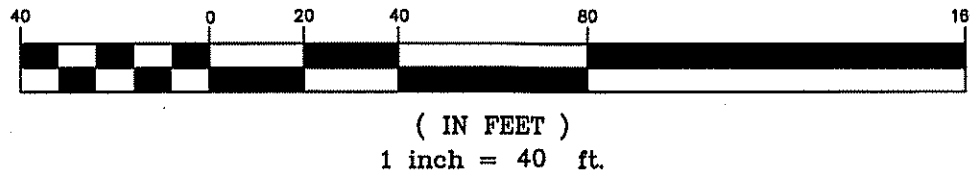
I, CLERK OF THE TOWN OF GRAFTON, MASSACHUSETTS HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE GRAFTON PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE NEXT TWENTY DAYS AFTER RECEIPT AND RECORDING OF SAID NOTICE.

TOWN CLERK _____ DATE _____
SUBJECT TO COVENANT DATED _____ RECORDED AT THE WORCESTER COUNTY REGISTRY OF DEEDS.
BOOK _____ PAGE _____ INSTRUMENT # _____

THIS PLAN WAS PREPARED IN ACCORDANCE WITH A MAJOR RESIDENTIAL DEVELOPMENT SPECIAL PERMIT GRANTED BY THE GRAFTON PLANNING BOARD AND FILED WITH THE TOWN CLERK ON MAY 19, 2015 AND RECORDED IN THE WORCESTER DISTRICT REGISTRY OF DEEDS BOOK 55687, PAGE 313.

SEE SHEET 28 FOR PLANNING BOARD CONDITIONS OF APPROVAL

GRAPHIC SCALE



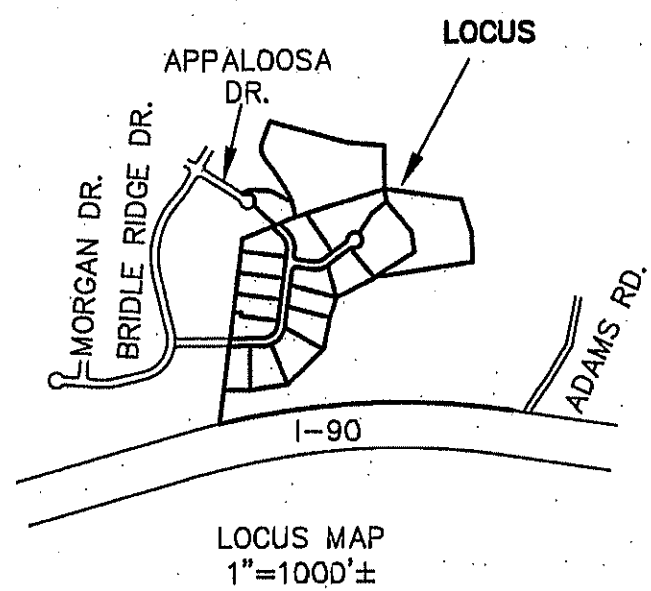
McCarty Engineering, Inc.
Civil Engineers
42 Jungle Road, Leominster, MA 01453
phone: (978) 534-1318 fax: (978) 840-6907
www.mccartydb.com

Project Name
Estates at Bull Meadow
Definitive Plan
N. Grafton, MA 01536

Sheet Title
Existing Conditions
Survey
(1 of 2)

Job No: 066 Sheet No. 1 OF 29
File Name: 066P-CEC01
Date: June 10, 2016
Scale: 1"=40'

P:\CADD\ME056-Land\Definitive\Revised\Pub\066P-CEC01.dwg 1/10/2017 11:45 AM by: Brian Marchetti



APPROVED BY THE GRAFTON
PLANNING BOARD DATE: _____

NOTES:

1. OWNER/APPLICANT: BULL MEADOW, LLC
BK. 53605, P. 363
BK. 35310, P. 74
BK. 34958, P. 35
2. PLAN REFERENCES: P.B. 750, P. 55
P.B. 784, P. 109
P.B. 799, P. 108
P.B. 911, P. 97
3. THE SUBJECT PREMISES IS GRAPHICALLY SITUATED IN THE R-40 ZONING DISTRICT WITH THE FOLLOWING MINIMUM DIMENSIONAL REQUIREMENTS:
MINIMUM LOT AREA: 40,000 S.F.
MINIMUM LOT FRONTAGE: 140 FT.
MINIMUM FRONT SETBACK: 30 FT.
MINIMUM SIDE SETBACK: 15 FT.
MINIMUM REAR SETBACK: 15 FT.
4. THE SUBJECT PREMISES IS NOT GRAPHICALLY SITUATED IN THE 100-YEAR FLOOD HAZARD ZONE PER FLOOD INSURANCE RATE MAPS 25027C0831F AND 25027C0832F DATED JULY 16, 2014.
5. OPEN SPACE PARCELS A AND B ARE NOT TO BE CONSIDERED BUILDING LOTS, NO FURTHER BUILDING MAY OCCUR WITHOUT FURTHER APPROVAL BY THE PLANNING BOARD PURSUANT TO THE SUBDIVISION CONTROL LAW.
6. SEE SHEET 28 FOR PLANNING BOARD CONDITIONS OF APPROVAL.

▣ DENOTES GRANITE BOUND TO BE SET

I HEREBY CERTIFY THAT NO NOTICE OF APPEALS WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER THE RECEIPT AND RECORDING OF THE NOTICE FROM THE GRAFTON PLANNING BOARD OF THE APPROVAL OF THIS PLAN.

TOWN OF GRAFTON CLERK _____ DATE _____



P.B. 784, P. 109

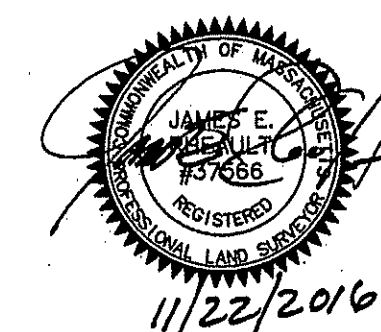
ESTATES AT BULL MEADOW
DEFINITIVE SUBDIVISION PLAN OF LAND
IN GRAFTON, MA
PREPARED FOR
BULL MEADOW, LLC

JUNE 10, 2016

100 0 100 200

REVISED 10-11-16
REVISED 11-22-16

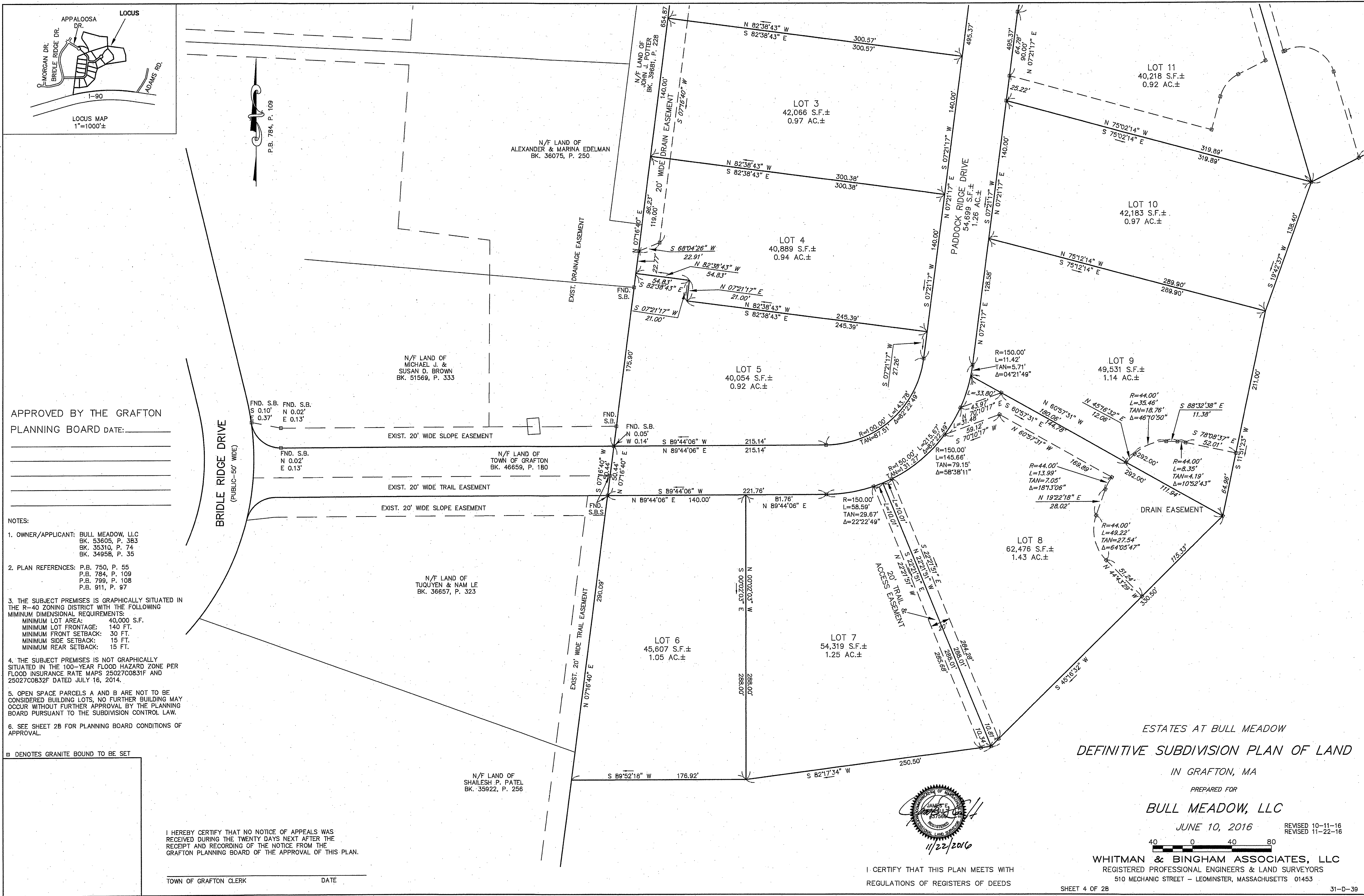
WHITMAN & BINGHAM ASSOCIATES, LLC
REGISTERED PROFESSIONAL ENGINEERS & LAND SURVEYORS
510 MECHANIC STREET - LEOMINSTER, MASSACHUSETTS 01453

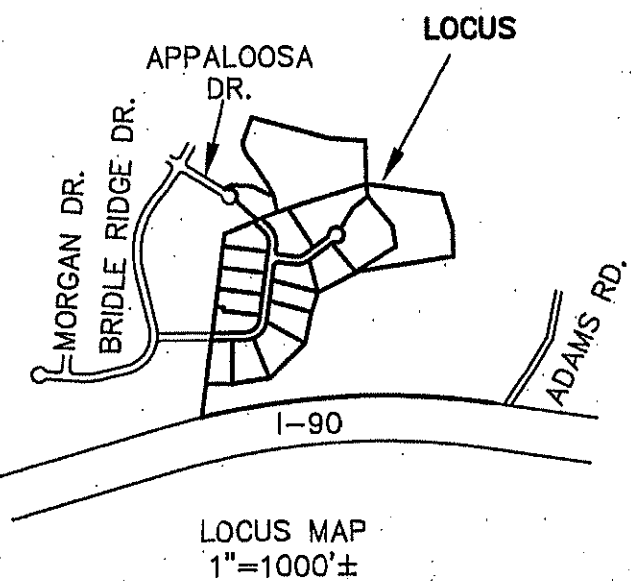


I CERTIFY THAT THIS PLAN MEETS WITH
REGULATIONS OF REGISTERS OF DEEDS

SHEET 3 OF 28

31-D-39





BK. 34958, P. 35

APPALOOSA DRIVE
(PUBLIC-50' WIDE)

AND OF
J. POTTER
381, P. 228

APPROVED BY THE GRAFTON
PLANNING BOARD DATE: _____

NOTES:

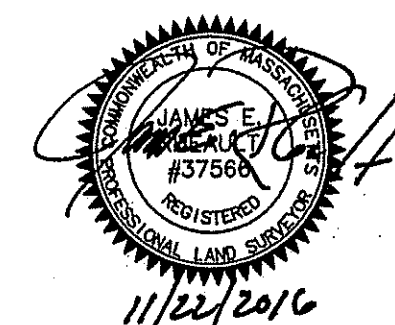
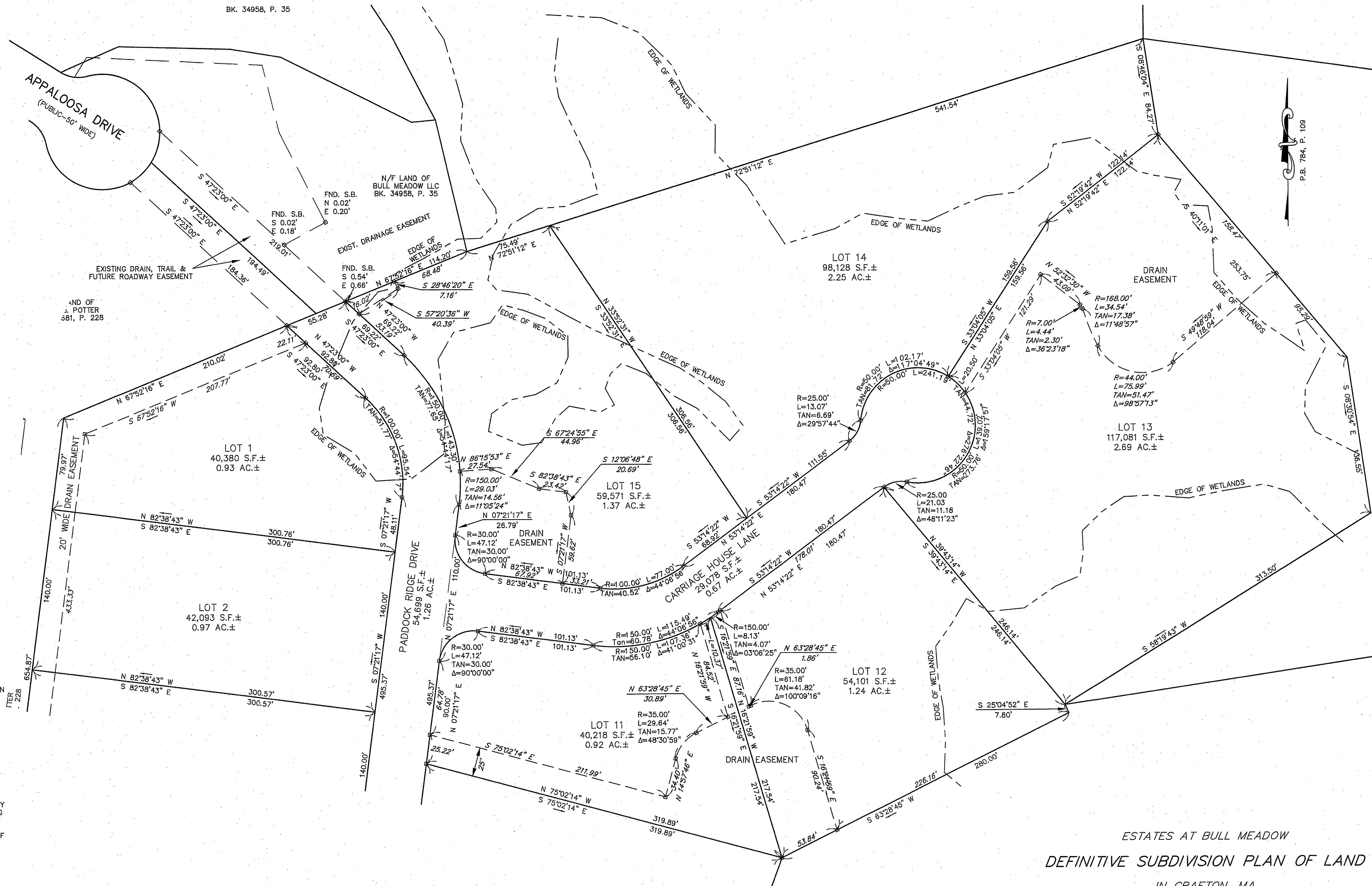
- OWNER/APPLICANT: BULL MEADOW, LLC
BK. 53605, P. 383
BK. 35310, P. 74
BK. 34958, P. 35
- PLAN REFERENCES: P.B. 750, P. 55
P.B. 784, P. 109
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TOWN OF GRAFTON CLERK

DATE



I CERTIFY THAT THIS PLAN MEETS WITH
REGULATIONS OF REGISTERS OF DEEDS

ESTATES AT BULL MEADOW
DEFINITIVE SUBDIVISION PLAN OF LAND

IN GRAFTON, MA

PREPARED FOR

BULL MEADOW, LLC

JUNE 10, 2016

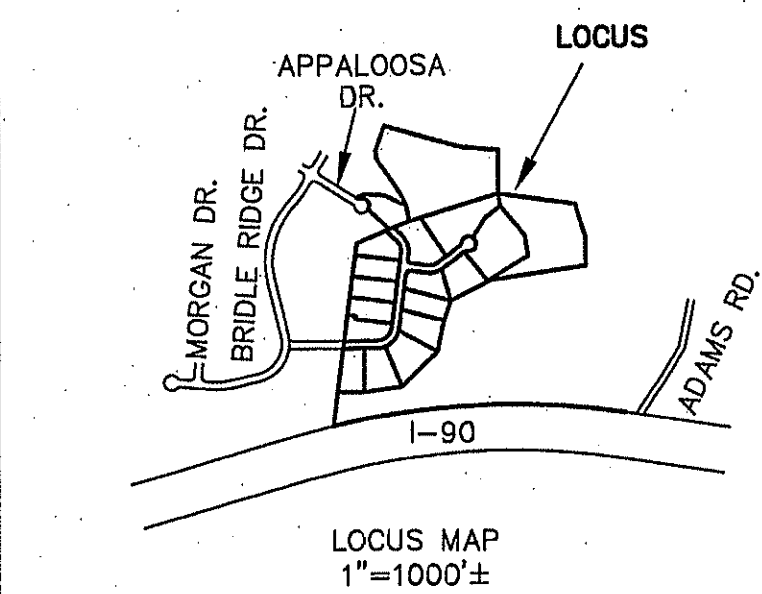
REVISED 10-11-16
REVISED 11-22-16

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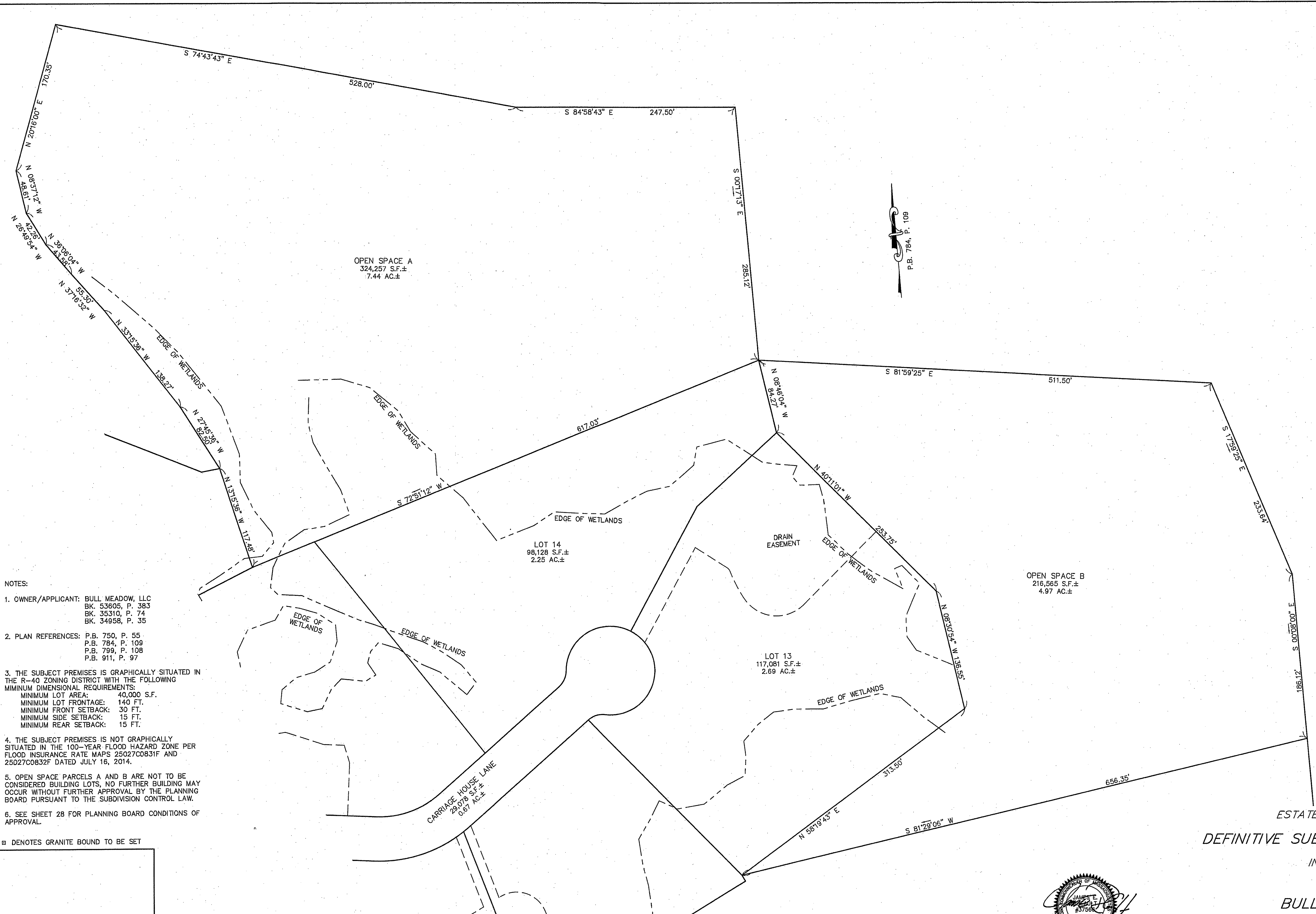
WHITMAN & BINGHAM ASSOCIATES, LLC
REGISTERED PROFESSIONAL ENGINEERS & LAND SURVEYORS
510 MECHANIC STREET - LEOMINSTER, MASSACHUSETTS 01453

SHEET 5 OF 28

31-D-39



APPROVED BY THE GRAFTON
PLANNING BOARD DATE: _____

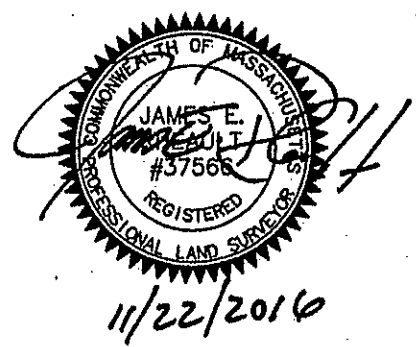


- NOTES:
1. OWNER/APPLICANT: BULL MEADOW, LLC
BK. 53605, P. 383
BK. 35310, P. 74
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TOWN OF GRAFTON CLERK _____ DATE _____



I CERTIFY THAT THIS PLAN MEETS WITH
REGULATIONS OF REGISTERS OF DEEDS

ESTATES AT BULL MEADOW
DEFINITIVE SUBDIVISION PLAN OF LAND
IN GRAFTON, MA

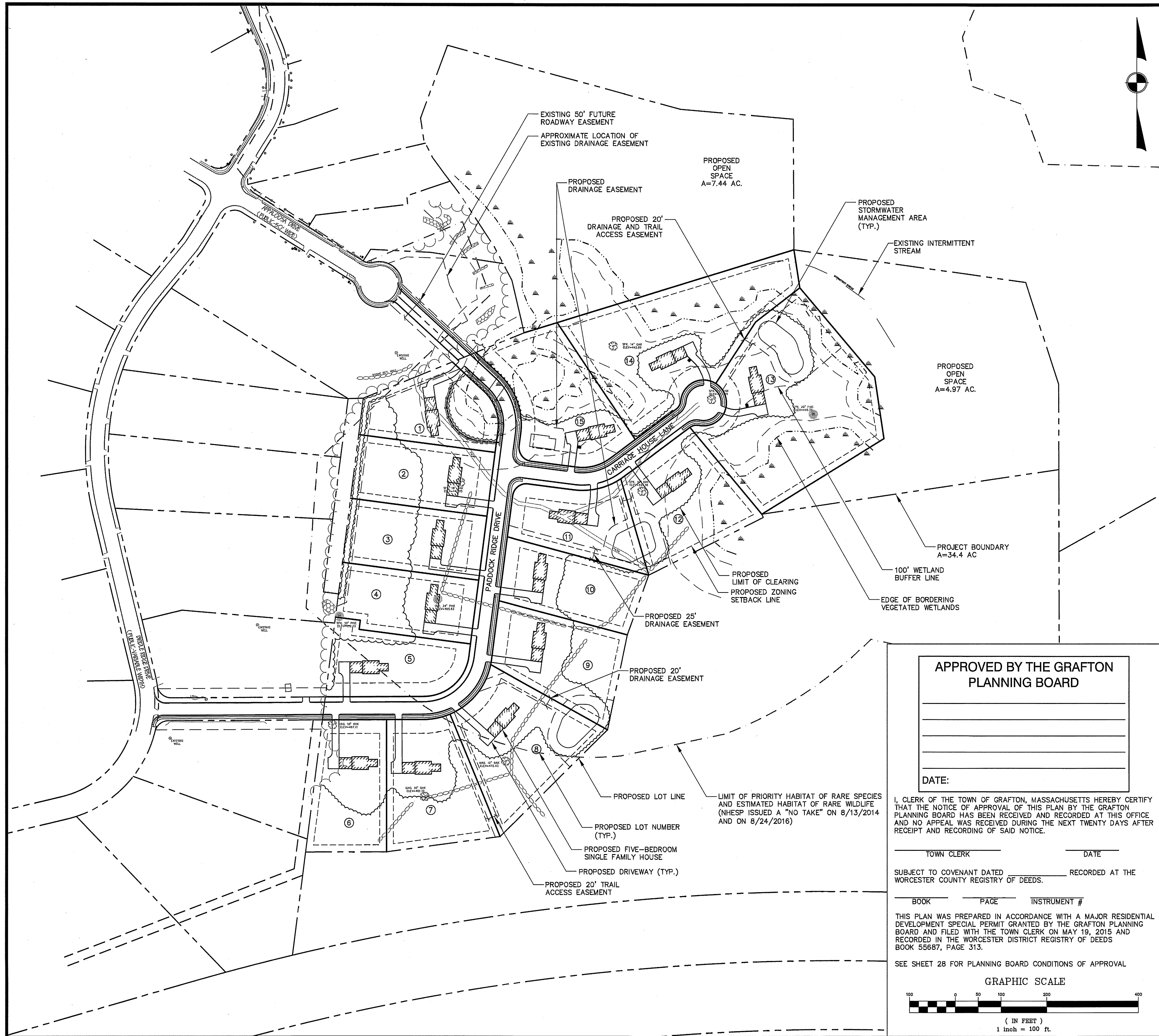
PREPARED FOR
BULL MEADOW, LLC

JUNE 10, 2016
REVISED 10-11-16
REVISED 11-22-16

50 0 50 100

WHITMAN & BINGHAM ASSOCIATES, LLC
REGISTERED PROFESSIONAL ENGINEERS & LAND SURVEYORS
510 MECHANIC STREET - LEOMINSTER, MASSACHUSETTS 01453

F:\CADD\066-Lewis\Definitive\Plan\066P-CSP01.dwg 1/10/2017 1:55 AM By: Brian Marchetti



APPROVED BY THE GRAFTON
PLANNING BOARD

DATE:

I, CLERK OF THE TOWN OF GRAFTON, MASSACHUSETTS HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE GRAFTON PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE NEXT TWENTY DAYS AFTER RECEIPT AND RECORDING OF SAID NOTICE.

TOWN CLERK

DATE

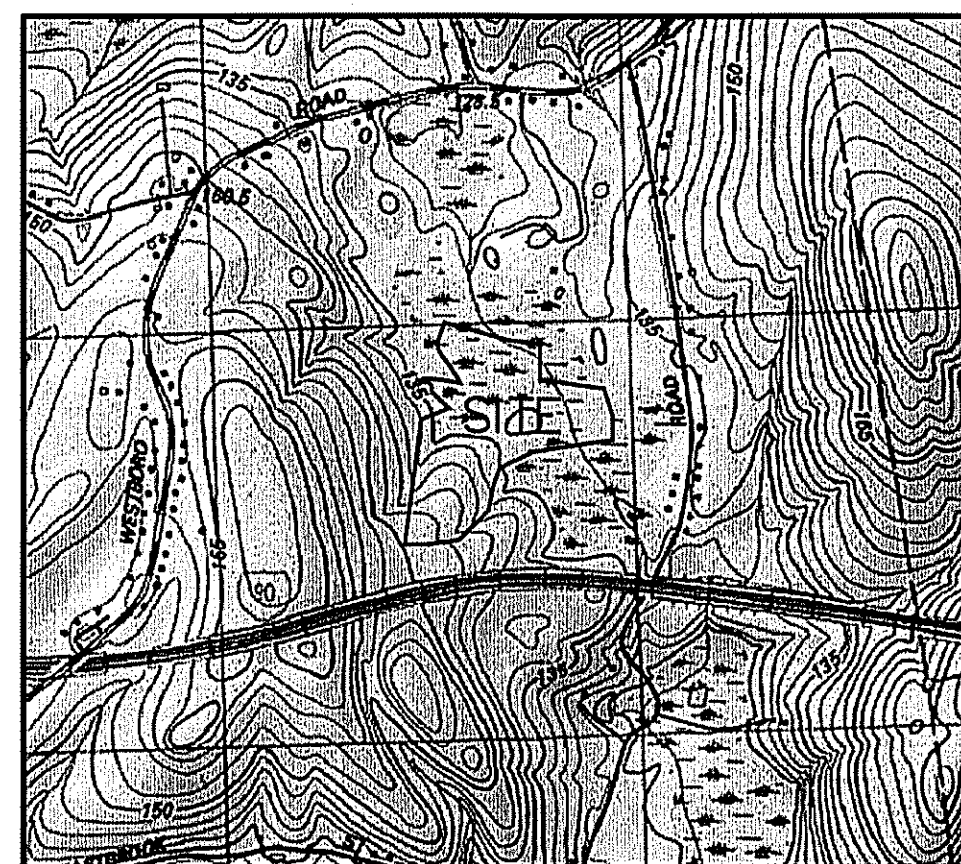
SUBJECT TO COVENANT DATED _____ RECORDED AT THE
WORCESTER COUNTY REGISTRY OF DEEDS.

BOOK PAGE INSTRUMENT #

THIS PLAN WAS PREPARED IN ACCORDANCE WITH A MAJOR RESIDENTIAL DEVELOPMENT SPECIAL PERMIT GRANTED BY THE GRAFTON PLANNING BOARD AND FILED WITH THE TOWN CLERK ON MAY 19, 2015 AND RECORDED IN THE WORCESTER DISTRICT REGISTRY OF DEEDS BOOK 55687, PAGE 313.

SEE SHEET 28 FOR PLANNING BOARD CONDITIONS OF APPROVAL

GRAPHIC SCALE



LOCUS PLAN

1"=1,500 FT.±

NOTES:

1. WETLAND DELINEATION SHOWN WAS COMPLETED BY ECOTEC, INC. ON NOVEMBER 13, 2013 AND WAS GPS LOCATED ON DECEMBER 12, 2013 BY WHITMAN & BINGHAM ASSOCIATES.
2. THE PROPOSED SUBDIVISION WILL BE SERVICED BY DOMESTIC WATER AND FIRE PROTECTION. A NEW DUCTILE IRON WATER SERVICE WILL BE EXTENDED FROM THE INTERSECTION OF OLD WESTBORO ROAD AND BRIDLE RIDGE DRIVE APPROXIMATELY 2,500 LF TO THE END OF THE CUL-DE-SAC ON APPALOOSA DRIVE.

LEGEND:

① PROPOSED LOT NUMBER

ZONING SUMMARY:

DISTRICT: R40

DIMENSIONAL REQUIREMENTS:

	PROVIDED	CONFORMANCE
MIN. LOT WIDTH:	140 FT	YES
90 FT ON CDS	90 FT	YES
FRONT SETBACK:	30 FT	YES
REAR SETBACK:	15 FT	YES
SIDE SETBACK:	15 FT	YES
MAX. HEIGHT:	35 FT	YES
FRONTAGE:	140 FT	YES
LOT AREA:	40,000 SF	YES
MAX. COVERAGE:	30%	YES

DESIGN FEATURES:

LENGTH OF ROADWAY: 2,125 FT.
ROAD A 1,660 FT.
ROAD B 465 FT.

NUMBER OF LOTS: 15
ON-SITE SEPTIC SYSTEMS: YES
TOWN WATER: YES

RECORD OWNERS:

BULL MEADOW, LLC.
2 RACHEL ROAD
BOYLSTON, MA 01505
PARCEL ID: 110/31.0-0000-0123.0
BOOK 34958, PAGE 35

BULL MEADOW, LLC.
2 RACHEL ROAD
BOYLSTON, MA 01505
PARCEL ID: 110/32.0-0000-0005.A
BOOK 35310, PAGE 74

MassDOT
10 PARK PLAZA
BOSTON, MA 02116
PARCEL ID: 110/31.0-0000-0100.0
BOOK 3919, PAGE 318

MassDOT
10 PARK PLAZA
BOSTON, MA 02116
PARCEL ID: 110/32.0-0000-0100.0
BOOK N/A, PAGE N/A

TOWN OF GRAFTON
30 PROVIDENCE ROAD
GRAFTON, MA 01519
PARCEL ID: 110/31.0-0000-0214.B
BOOK 46659, PAGE 180

NOT FOR CONSTRUCTION
THESE PLANS WERE PREPARED FOR
THE PURPOSE OF OBTAINING STATE
AND LOCAL PERMITS AND ARE NOT
INTENDED TO BE USED AS
CONSTRUCTION DOCUMENTS.

PREPARED FOR:
BULL MEADOW, LLC.
2 RACHEL ROAD
BOYLSTON, MA 01505

No.	Date	Revision
3	01/09/2017	TOWN COMMENTS
2	11/22/2016	TOWN COMMENTS
1	10/11/2016	TOWN COMMENTS



Drawn By: BRM
Designed By: BRM
Checked By: BSM

McCarty Engineering, Inc.
Civil Engineers

42 Jungle Road, Leominster, MA 01453
phone:(978) 534-1318 fax: (978) 840-6907
www.mccartydb.com

Project Name

Estates at Bull Meadow
Definitive Plan
N. Grafton, MA 01536

Sheet Title

Overall Conventional
Subdivision Plan
(1 of 3)

Job No: 066

File Name: 066P-CSP01

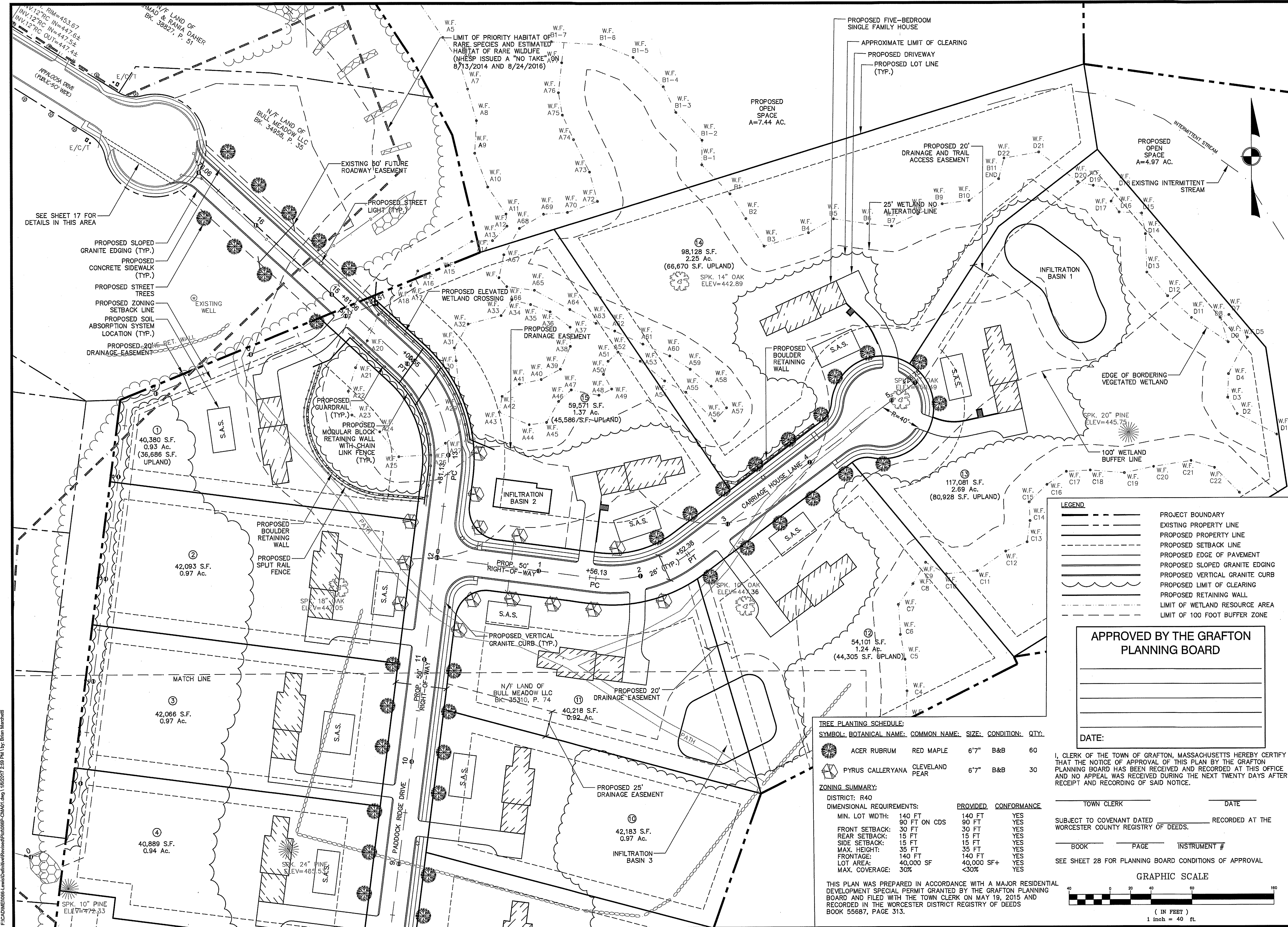
Date: June 10, 2016

Scale: 1"=100'

Sheet No.

7

OF 29



NOT FOR CONSTRUCTION

THESE PLANS WERE PREPARED FOR THE PURPOSE OF OBTAINING STATE AND LOCAL PERMITS AND ARE NOT INTENDED TO BE USED AS CONSTRUCTION DOCUMENTS.

PREPARED FOR:
BULL MEADOW, LLC.
2 RACHEL ROAD
BOYLSTON, MA 01505

No.	Date	Revision
3	01/09/2017	TOWN COMMENTS
2	11/22/2016	TOWN COMMENTS
1	10/11/2016	TOWN COMMENTS

APPROVED BY THE GRAFTON PLANNING BOARD

DATE: _____

McCarthy Engineering, Inc.
Civil Engineers
42 Jungle Road, Leominster, MA 01453
phone: (978) 534-1318 fax: (978) 840-6907
www.mccartydb.com

Project Name
Estates at Bull Meadow
Definitive Plan
N. Grafton, MA 01536

Sheet Title
Layout and Materials
Plan
(2 of 3)

Job No: 066
File Name: 066P-CMA01
Date: June 10, 2016
Scale: 1"=40'

Sheet No.
8
OF 29

F:\CADD\ME1066-Levels\Definitive\Revised\Plan\066P-CMA01.dwg, 11/20/2017 2:59 PM by: Brian Marchetti

PREPARED FOR:
BULL MEADOW, LLC.
2 RACHEL ROAD
BOYLSTON, MA 01505

3	01/09/2017	TOWN COMMENTS
2	11/22/2016	TOWN COMMENTS
1	10/11/2016	TOWN COMMENTS
No.	Date	Revision

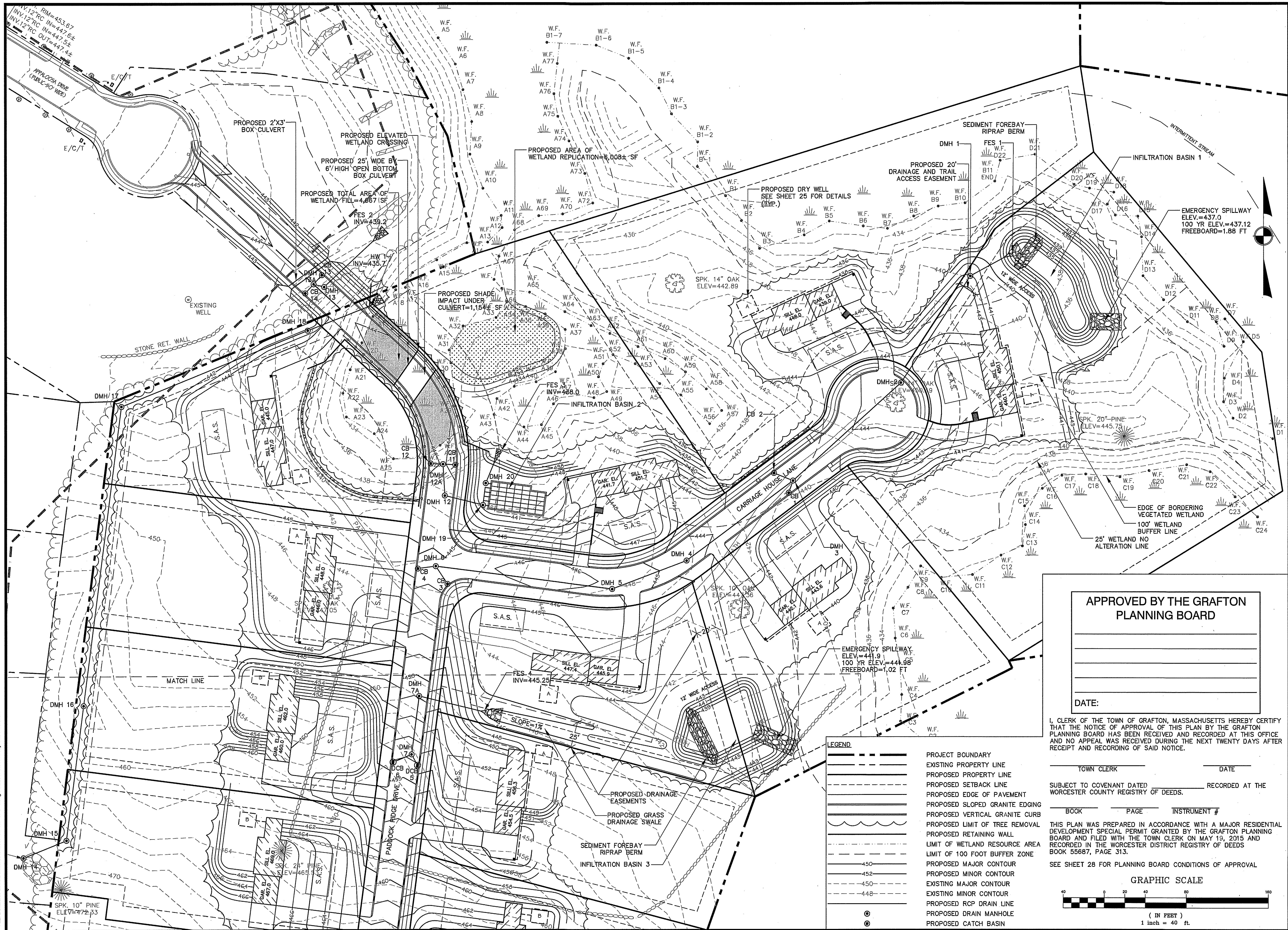


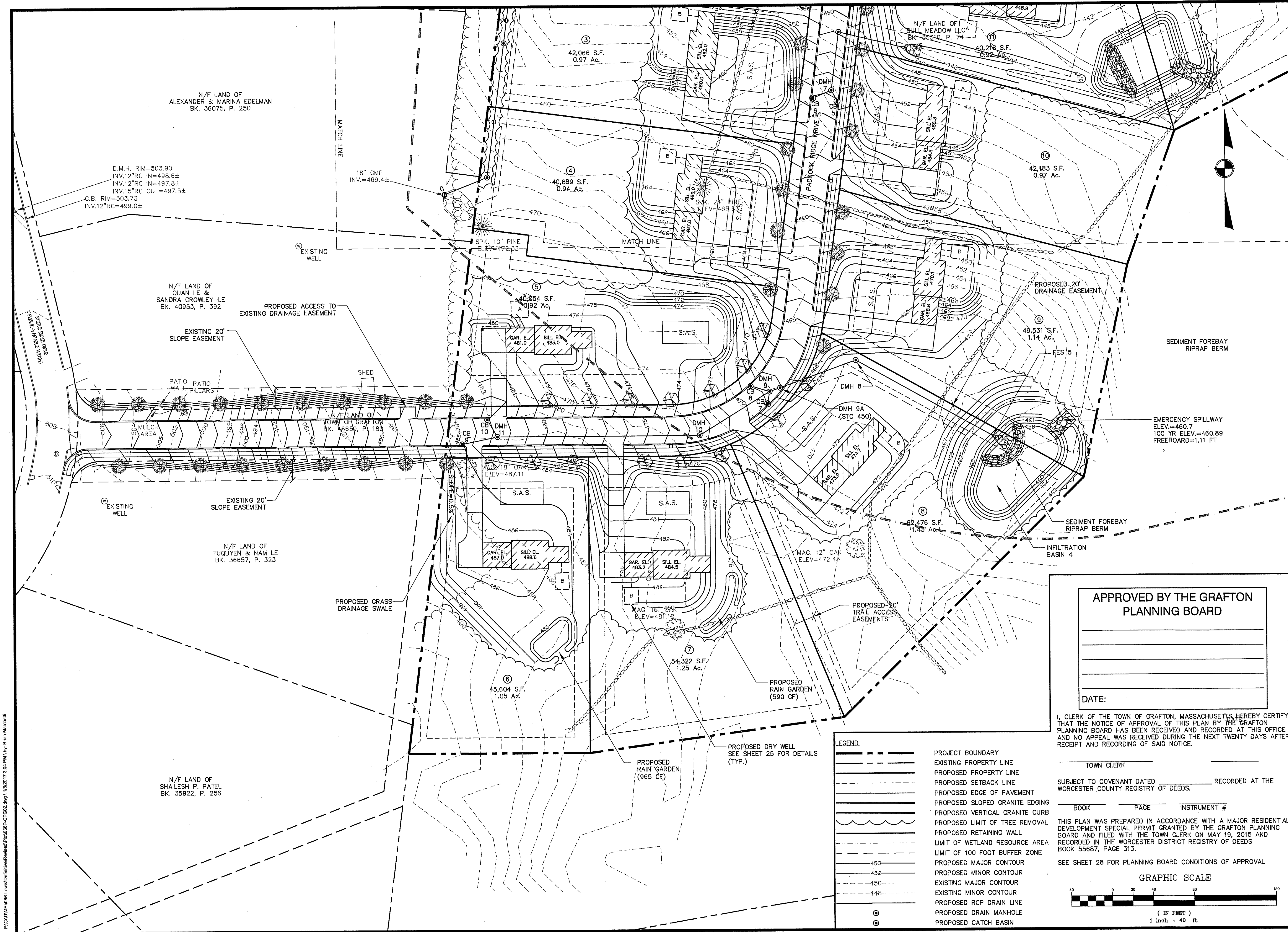
Drawn By: BRM Designed By: BRM Checked By: BZK

Project Name
Estates at Bull Meadow
Definitive Plan
N. Grafton, MA 01536

Job No: 066
File Name: 066P-CPG01
Date: June 10, 2016
Scale: 1"=40'

Sheet No.
10
OF 29





NOT FOR CONSTRUCTION
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PREPARED FOR:
BULL MEADOW, LLC.
2 RACHIEL ROAD
BOYLSTON, MA 01505

3	01/09/2017	NO CHANGES
2	11/22/2016	TOWN COMMENTS
1	10/11/2016	TOWN COMMENTS
No.	Date	Revision

APPROVED BY THE GRAFTON PLANNING BOARD

DATE: _____

I, CLERK OF THE TOWN OF GRAFTON, MASSACHUSETTS, HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE GRAFTON PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE NEXT TWENTY DAYS AFTER RECEIPT AND RECORDING OF SAID NOTICE.

TOWN CLERK _____

SUBJECT TO COVENANT DATED _____ RECORDED AT THE WORCESTER COUNTY REGISTRY OF DEEDS.

BOOK _____ PAGE _____ INSTRUMENT # _____

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SEE SHEET 28 FOR PLANNING BOARD CONDITIONS OF APPROVAL

LEGEND

- PROJECT BOUNDARY
- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- PROPOSED SETBACK LINE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED SLOPED GRANITE EDGING
- PROPOSED VERTICAL GRANITE CURB
- PROPOSED LIMIT OF TREE REMOVAL
- PROPOSED RETAINING WALL
- LIMIT OF WETLAND RESOURCE AREA
- LIMIT OF 100 FOOT BUFFER ZONE
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED RCP DRAIN LINE
- PROPOSED DRAIN MANHOLE
- PROPOSED CATCH BASIN

GRAPHIC SCALE

1 inch = 40 ft.

McCarty Engineering, Inc.
Civil Engineers
42 Jungle Road, Leominster, MA 01453
phone: (978) 534-1318 fax: (978) 840-6907
www.mccartydb.com

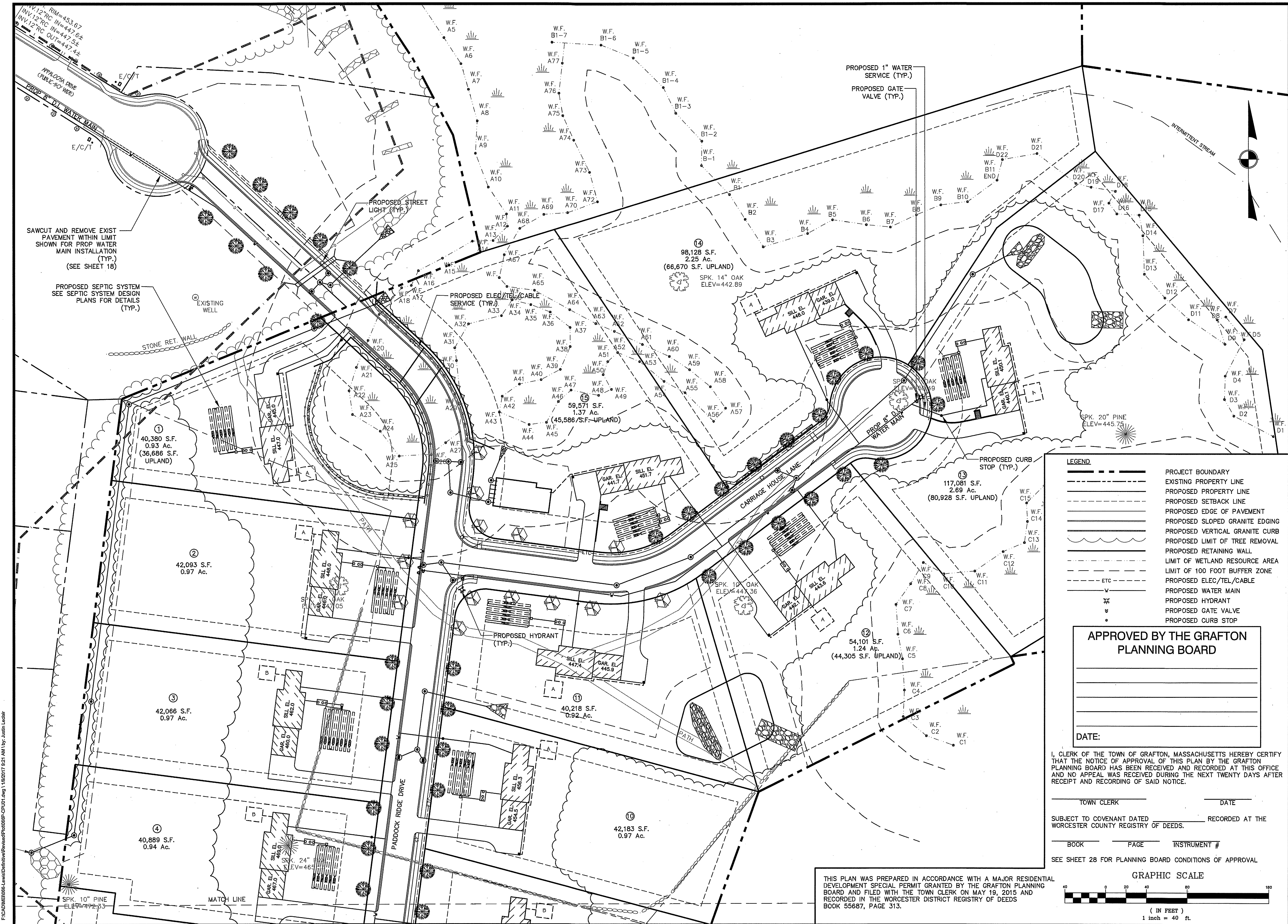
Estates at Bull Meadow
Definitive Plan
Grafton, MA 01519

Grading and Drainage Plan
(2 of 2)

Job No: 066
File Name: 066P-CPG02
Date: June 10, 2016
Scale: 1"=40'

Sheet No.
11
OF 29

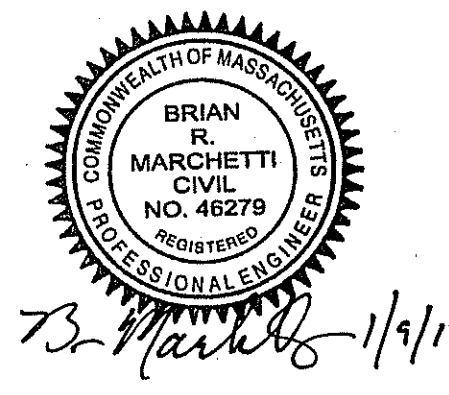
F:\CADD\066-Lewis\Drawings\Review\066P-CPG02.dwg 11/6/2017 3:04 PM By: Brian Marchetti



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PREPARED FOR:
BULL MEADOW, LLC.
2 RACHEL ROAD
BOYLSTON, MA 01505

No.	Date	Revision
3	01/09/2017	TOWN COMMENTS
2	11/22/2016	TOWN COMMENTS
1	10/11/2016	TOWN COMMENTS



Drawn By: BRM Designed By: BRM Checked By: *[Signature]*

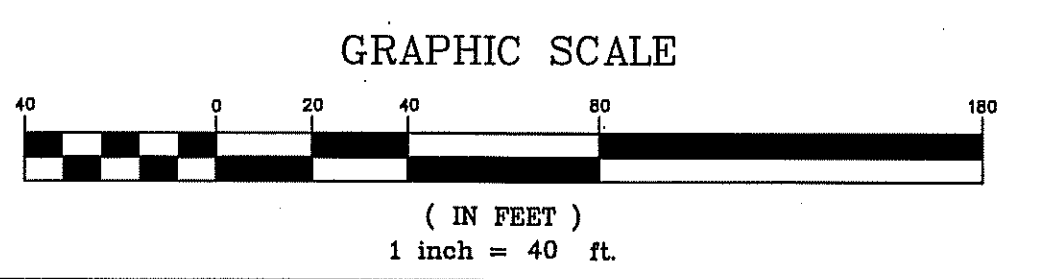
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- PROJECT BOUNDARY
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 - PROPOSED PROPERTY LINE
 - PROPOSED SETBACK LINE
 - PROPOSED EDGE OF PAVEMENT
 - PROPOSED SLOPED GRANITE EDGING
 - PROPOSED VERTICAL GRANITE CURB
 - PROPOSED LIMIT OF TREE REMOVAL
 - PROPOSED RETAINING WALL
 - LIMIT OF WETLAND RESOURCE AREA
 - LIMIT OF 100 FOOT BUFFER ZONE
 - PROPOSED ELEC./TEL./CABLE
 - PROPOSED WATER MAIN
 - PROPOSED HYDRANT
 - PROPOSED GATE VALVE
 - PROPOSED CURB STOP

APPROVED BY THE GRAFTON
PLANNING BOARD

DATE:

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THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE GRAFTON
PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE
AND NO APPEAL WAS RECEIVED DURING THE NEXT TWENTY DAYS AFTER
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TOWN CLERK _____ DATE _____
SUBJECT TO COVENANT DATED _____ RECORDED AT THE
WORCESTER COUNTY REGISTRY OF DEEDS.
BOOK _____ PAGE _____ INSTRUMENT # _____
SEE SHEET 28 FOR PLANNING BOARD CONDITIONS OF APPROVAL



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BOOK 55687, PAGE 313.

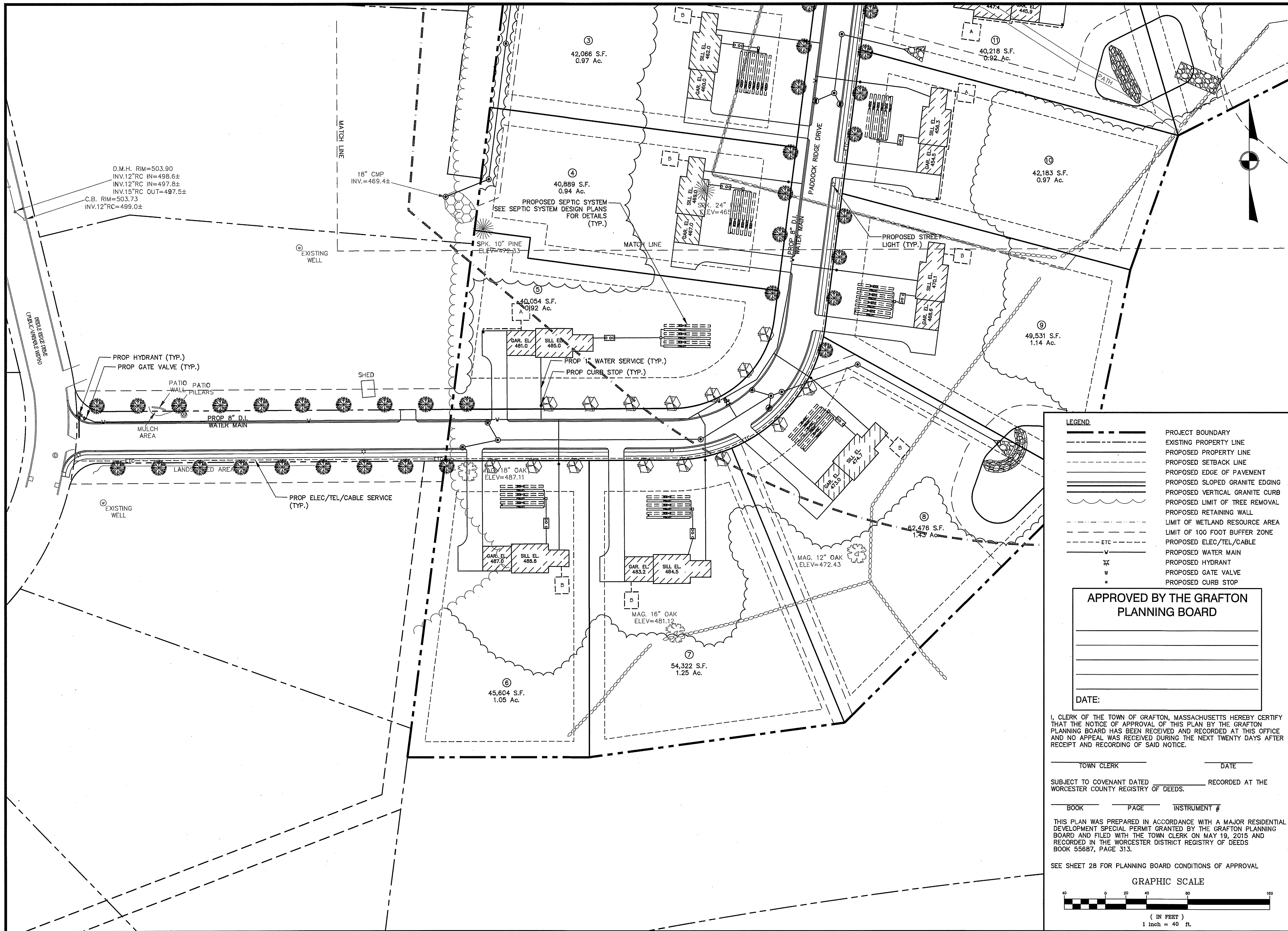
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Civil Engineers
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phone: (978) 534-1318 fax: (978) 840-6907
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Project Name
**Estates at Bull Meadow
Definitive Plan
N. Grafton, MA 01536**

Sheet Title
**Utility Plan
(1 of 2)**

Job No: 066
File Name: 066P-CPU01
Date: June 10, 2016
Scale: 1"=40'
Sheet No.
12
OF 29

F:\CADD\ME066-Lewis\Definitive\Revised\Plan\066P-CPU02.dwg 11/20/2017 9:25 AM by: Justin Leduc



- LEGEND**
- PROJECT BOUNDARY
 - EXISTING PROPERTY LINE
 - PROPOSED PROPERTY LINE
 - PROPOSED SETBACK LINE
 - PROPOSED EDGE OF PAVEMENT
 - PROPOSED SLOPED GRANITE EDGING
 - PROPOSED VERTICAL GRANITE CURB
 - PROPOSED LIMIT OF TREE REMOVAL
 - PROPOSED RETAINING WALL
 - LIMIT OF WETLAND RESOURCE AREA
 - LIMIT OF 100 FOOT BUFFER ZONE
 - PROPOSED ELEC/TEL/CABLE
 - PROPOSED WATER MAIN
 - PROPOSED HYDRANT
 - PROPOSED GATE VALVE
 - PROPOSED CURB STOP

APPROVED BY THE GRAFTON PLANNING BOARD

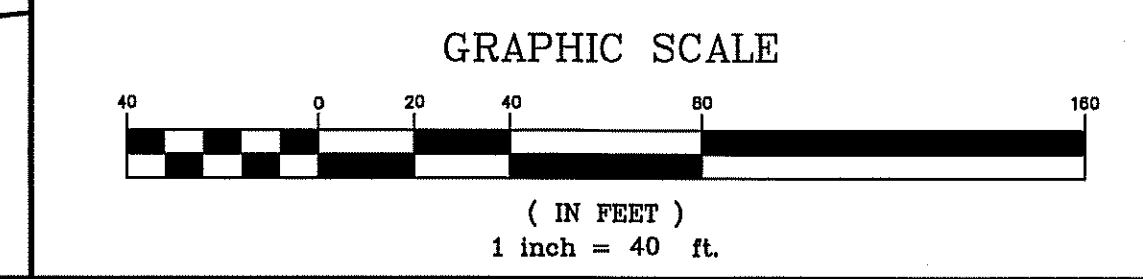
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SEE SHEET 28 FOR PLANNING BOARD CONDITIONS OF APPROVAL



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PREPARED FOR:
BULL MEADOW, LLC.
2 RACHEL ROAD
BOYLSTON, MA 01505

3	01/09/2017	TOWN COMMENTS
2	11/22/2016	TOWN COMMENTS
1	10/11/2016	TOWN COMMENTS
No.	Date	Revision



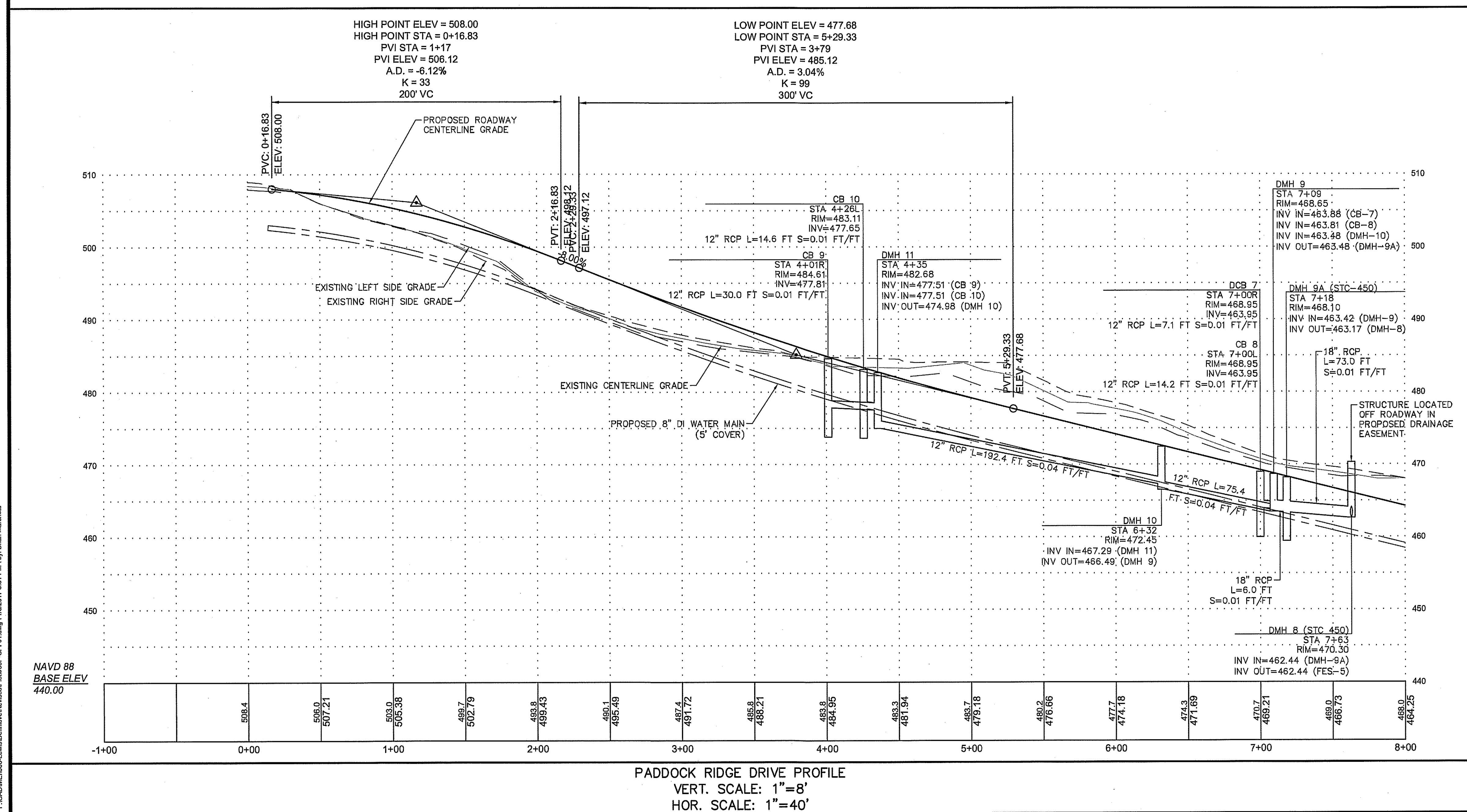
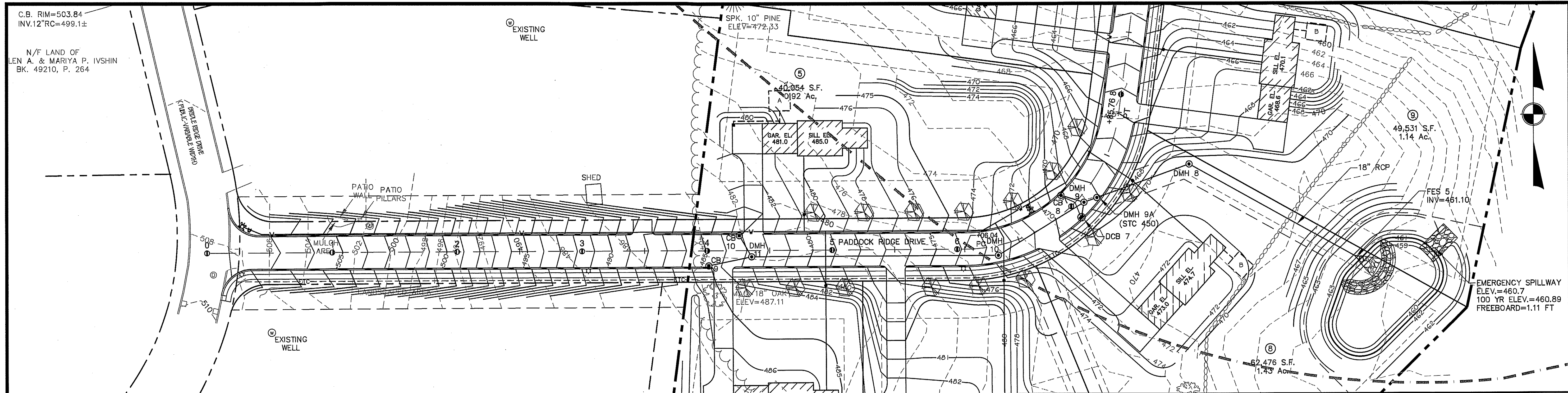
Drawn By: BRM
Designed By: BRM
Checked By: JSZ

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Project Name
Estates at Bull Meadow
Definitive Plan
N. Grafton, MA 01536

Sheet Title
Utility Plan
(2 of 2)

Job No: 066
File Name: 066P-CPU02
Date: June 10, 2016
Scale: 1"=40'
Sheet No.
13
OF 29



APPROVED BY THE GRAFTON
PLANNING BOARD

DATE:

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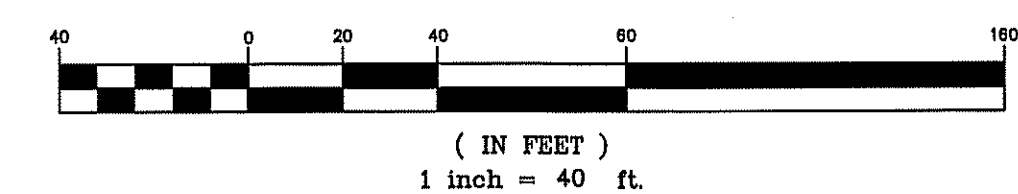
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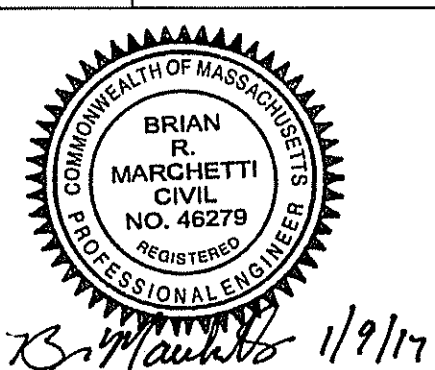
GRAPHIC SCALE



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PREPARED FOR:
BULL MEADOW, LLC.
2 RACHEL ROAD
BOYLSTON, MA 01505

No.	Date	Revision
3	01/09/2017	NO CHANGES
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Designed By: BRM
Checked By: JSM

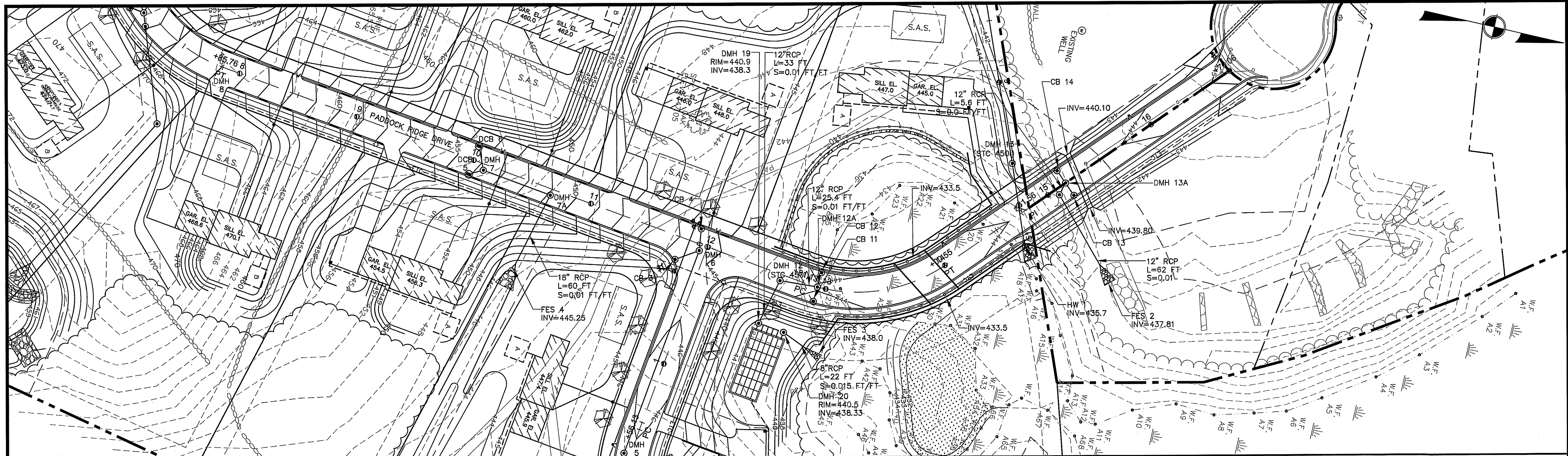
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Definitive Plan
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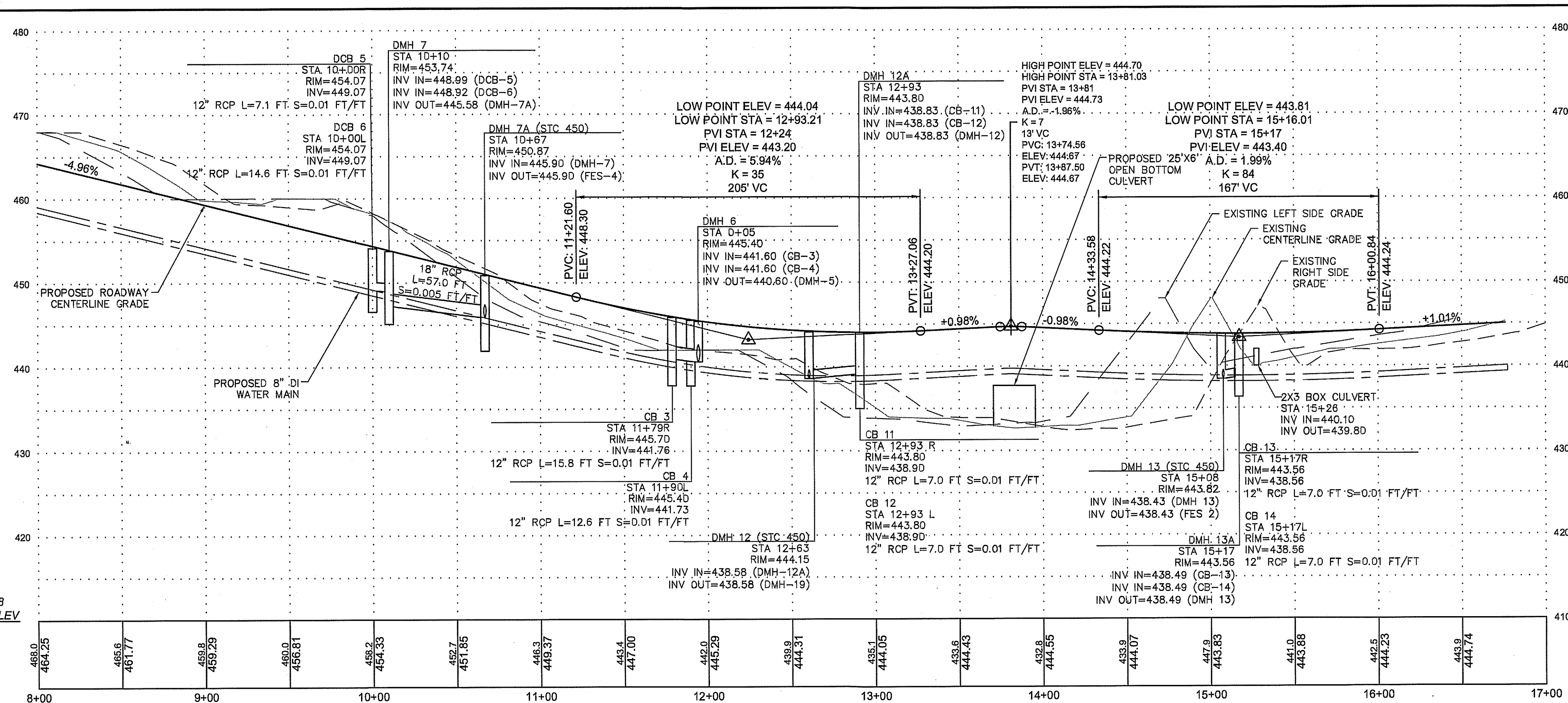
Sheet Title
Roadway and
Utility Profile
(1 of 4)

Job No: 066
File Name: 066P-CPFO1
Date: June 10, 2016
Scale: 1"=40'

Sheet No.
14
OF 29



PADDOCK RIDGE DRIVE PLAN
SCALE: 1"=40'



PADDOCK RIDGE DRIVE PROFILE
VERT. SCALE: 1"=8'
HOR. SCALE: 1"=40'

GENERAL NOTES:
1. THE 12" RCP PIPE BETWEEN CB 11, CB 12 AND DMH 20 SHALL BE CLASS V RCP.

APPROVED BY THE GRAFTON
PLANNING BOARD

DATE:

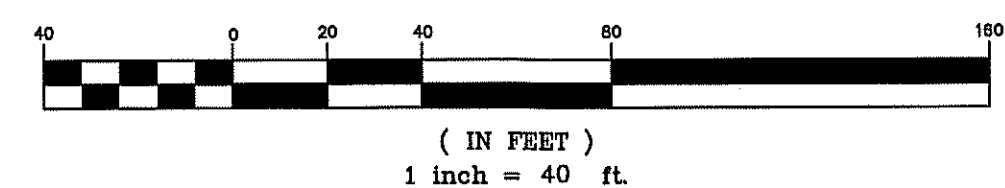
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SEE SHEET 28 FOR PLANNING BOARD CONDITIONS OF APPROVAL

GRAPHIC SCALE



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PREPARED FOR:
BULL MEADOW, LLC.
2 RACHEL ROAD
BOYLSTON, MA 01505

No.	Date	Revision
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Checked By: ZRM

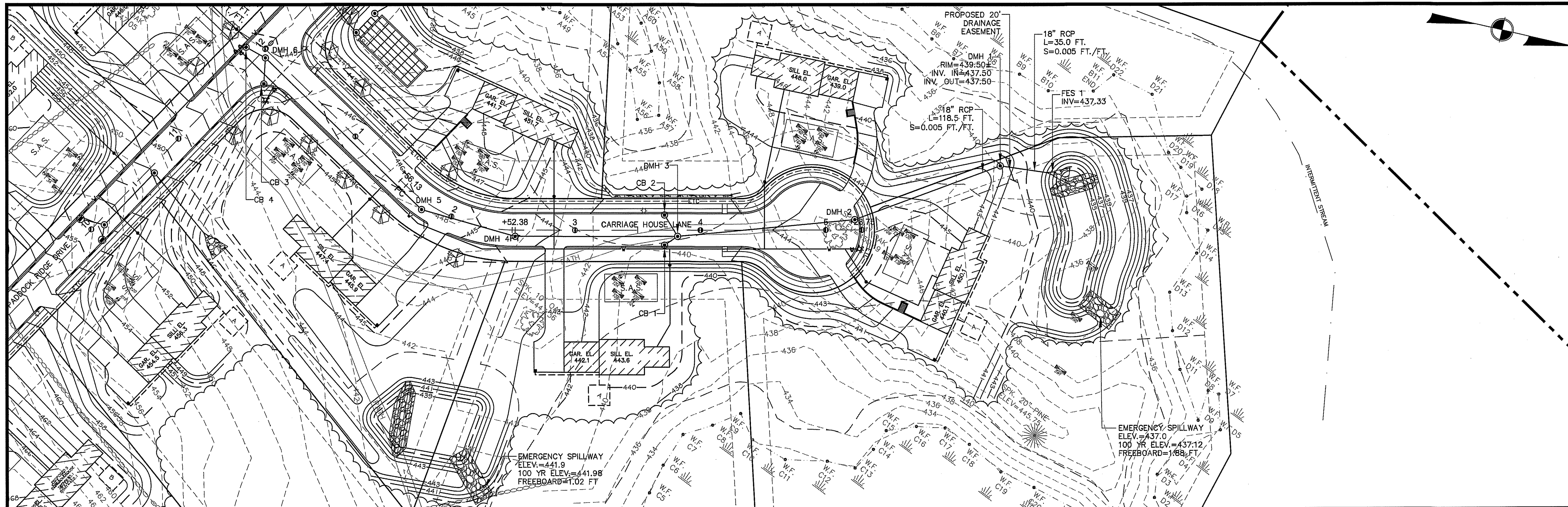
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Project Name
Estates at Bull Meadow
Definitive Plan
N. Grafton, MA 01536

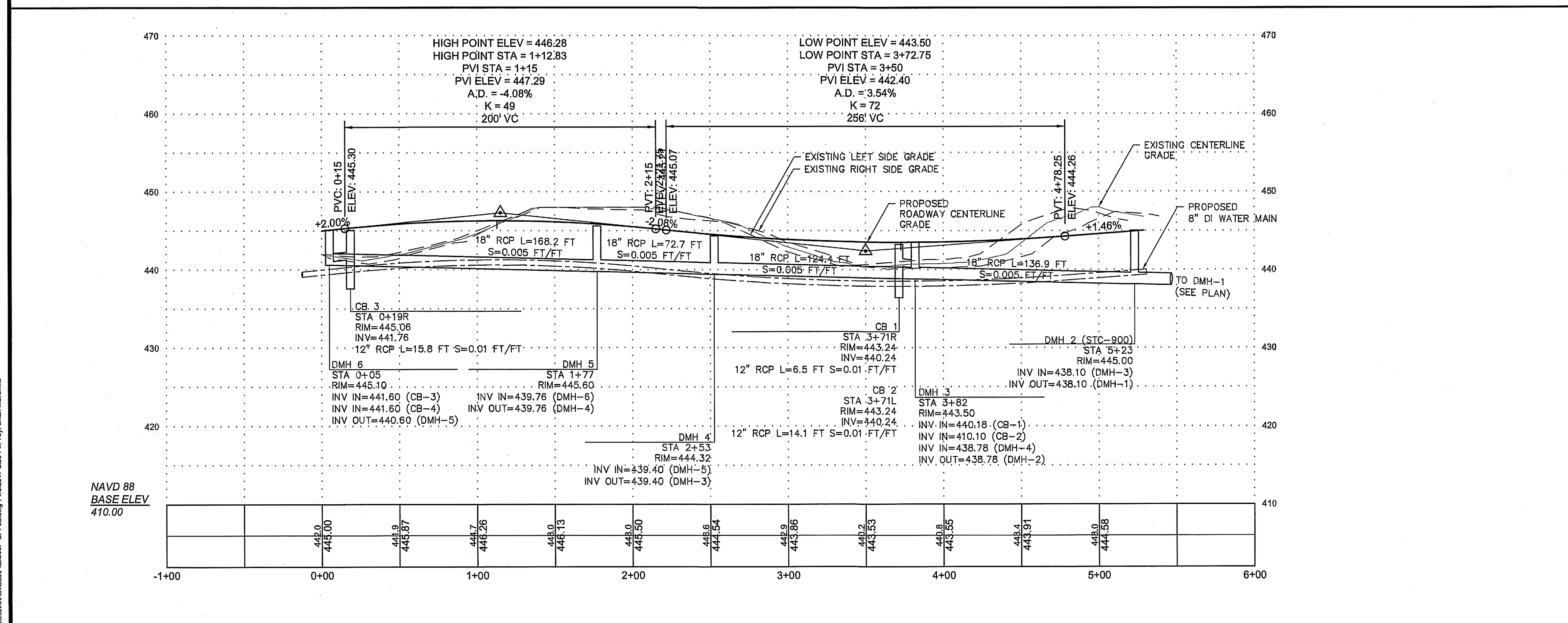
Sheet Title
Roadway and
Utility Profile
(2 of 4)

Job No: 066
File Name: 066P-CPP02
Date: June 10, 2016
Scale: 1"=40'

Sheet No.
15
OF 29



CARRIAGE HOUSE LANE PLAN
SCALE: 1"=40'



CARRIAGE HOUSE LANE PROFILE
VERT. SCALE: 1"=8'
HOR. SCALE: 1"=40'

GENERAL NOTES:
1. THE 24" RCP PIPE BETWEEN DMH 6 AND INFILTRATION BASIN 1 SHALL BE CLASS V RCP.

APPROVED BY THE GRAFTON
PLANNING BOARD

DATE:

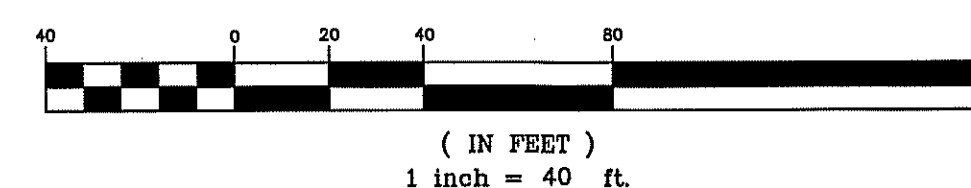
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SEE SHEET 28 FOR PLANNING BOARD CONDITIONS OF APPROVAL

GRAPHIC SCALE



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PREPARED FOR:
BULL MEADOW, LLC.
2 RACHEL ROAD
BOYLSTON, MA 01505

No.	Date	Revision
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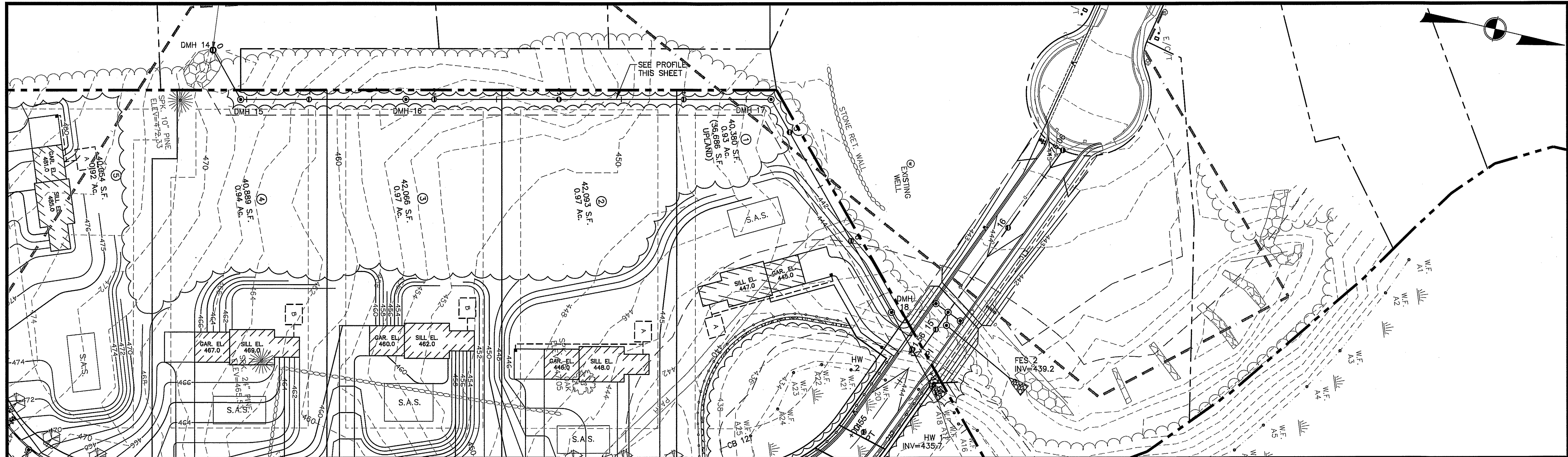
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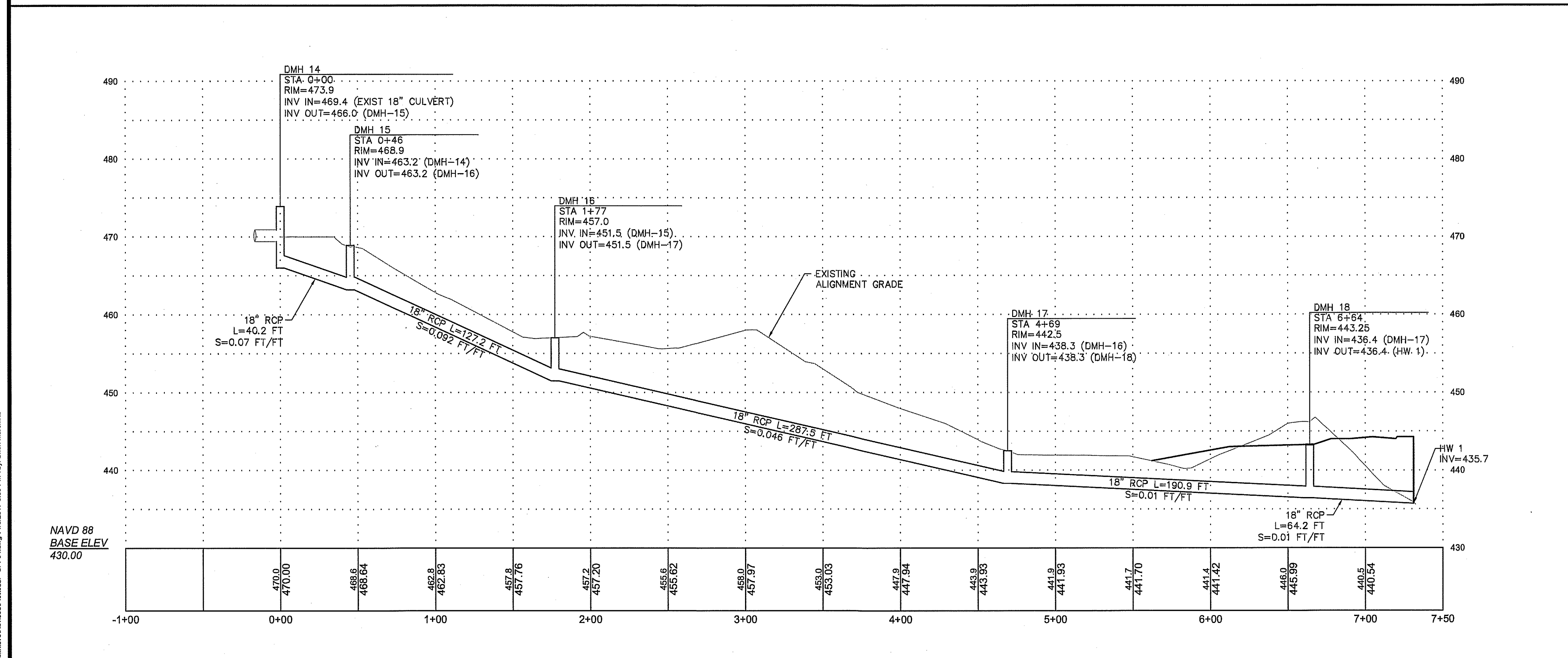
Project Name
Estates at Bull Meadow
Definitive Plan
N. Grafton, MA 01536

Sheet Title
Roadway and
Utility Profile
(3 of 4)

Job No: 066
File Name: 066P-CPF03
Date: June 10, 2016
Scale: 1"=40'
Sheet No.
16
OF 29



CROSS COUNTRY DRAIN PLAN
SCALE: 1"=40'



CROSS COUNTRY DRAIN PROFILE
VERT. SCALE: 1"=8'
HOR. SCALE: 1"=40'

APPROVED BY THE GRAFTON
PLANNING BOARD

DATE:

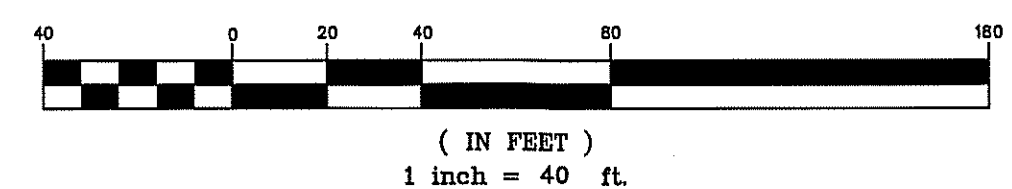
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GRAPHIC SCALE



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PREPARED FOR:
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2 RACHEL ROAD
BOYLSTON, MA 01505

No.	Date	Revision
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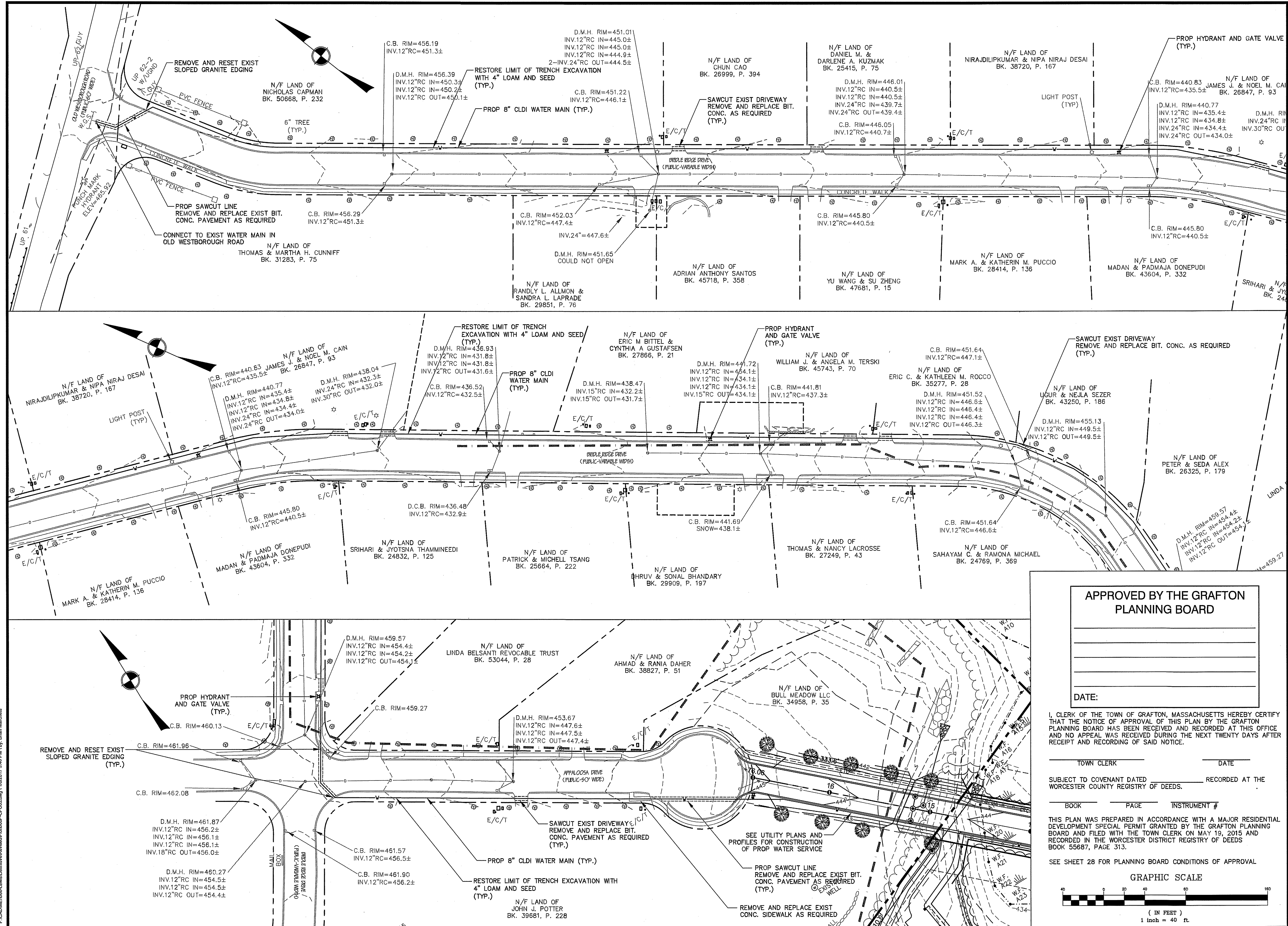
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Designed By: BRM
Checked By: *BRM*

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Project Name
Estates at Bull Meadow
Definitive Plan
N. Grafton, MA 01536

Sheet Title
Roadway and
Utility Profile
(4 of 4)

Job No: 066
File Name: 066P-CPP04
Date: June 10, 2016
Scale: 1"=40'
Sheet No.
17
OF 29



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PREPARED FOR:
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2 RACHEL ROAD
BOYLSTON, MA 01505

No.	Date	Revision
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1	10/11/2016	TOWN COMMENTS

Brian R. Marchetti 1/9/17

Drawn By: BRM Designed By: BRM Checked By: *BRM*

APPROVED BY THE GRAFTON PLANNING BOARD

DATE: _____

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SEE SHEET 28 FOR PLANNING BOARD CONDITIONS OF APPROVAL

GRAPHIC SCALE

1 inch = 40 ft.

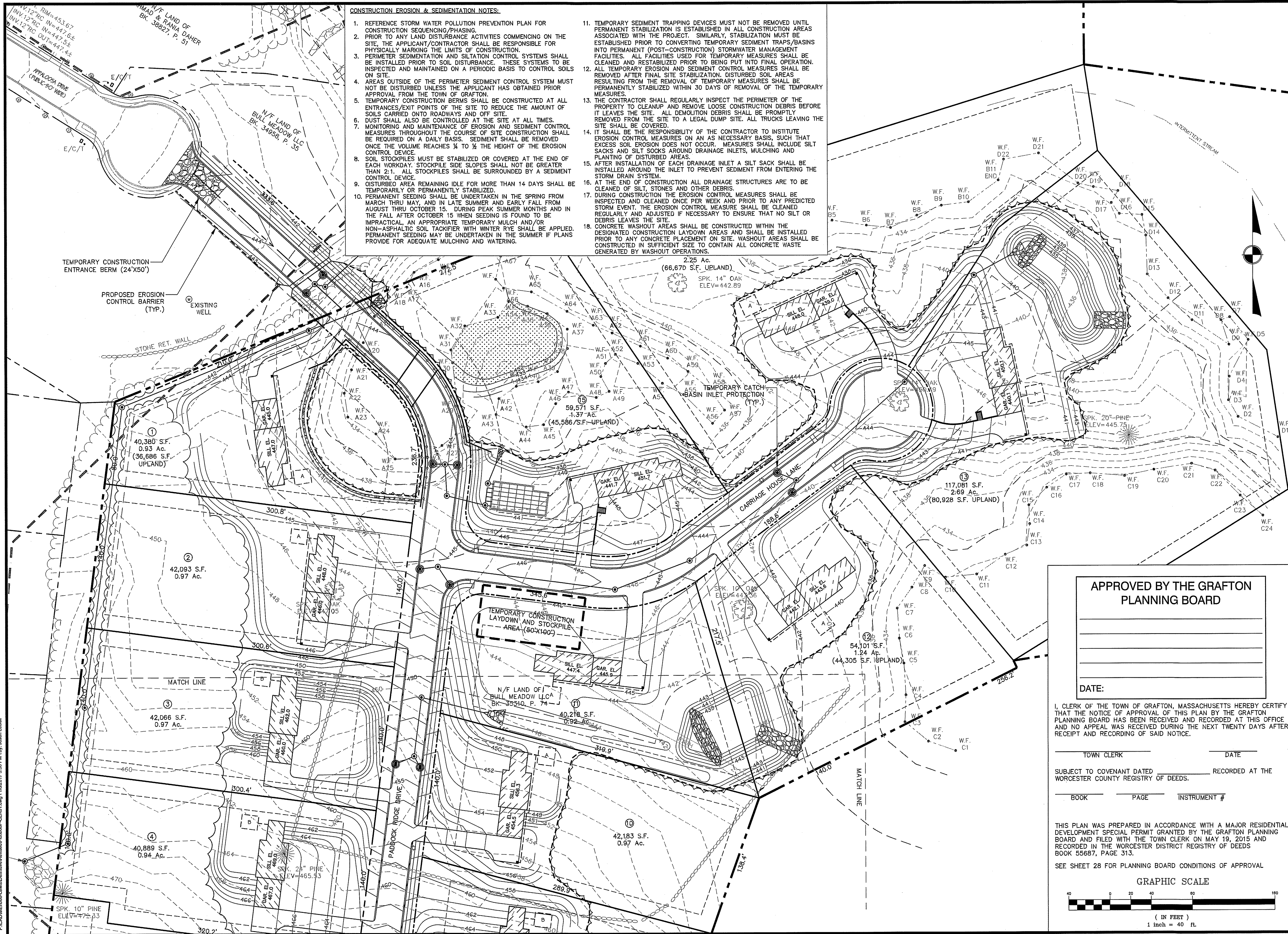
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Project Name
Estates at Bull Meadow
Definitive Plan
N. Grafton, MA 01536

Sheet Title
Water Main Extension Plan

Job No: 066 Sheet No.
File Name: 066P-CPU03 **18**
Date: June 10, 2016
Scale: 1"=120' OF 29

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CONSTRUCTION EROSION & SEDIMENTATION NOTES:

1. REFERENCE STORM WATER POLLUTION PREVENTION PLAN FOR CONSTRUCTION SEQUENCING/PHASING.
2. PRIOR TO ANY LAND DISTURBANCE ACTIVITIES COMMENCING ON THE SITE, THE APPLICANT/CONTRACTOR SHALL BE RESPONSIBLE FOR PHYSICALLY MARKING THE LIMITS OF CONSTRUCTION.
3. PERIMETER SEDIMENTATION AND SILTATION CONTROL SYSTEMS SHALL BE INSTALLED PRIOR TO SOIL DISTURBANCE. THESE SYSTEMS TO BE INSPECTED AND MAINTAINED ON A PERIODIC BASIS TO CONTROL SOILS ON SITE.
4. AREAS OUTSIDE OF THE PERIMETER SEDIMENT CONTROL SYSTEM MUST NOT BE DISTURBED UNLESS THE APPLICANT HAS OBTAINED PRIOR APPROVAL FROM THE TOWN OF GRAFTON.
5. TEMPORARY CONSTRUCTION BERM SHALL BE CONSTRUCTED AT ALL ENTRANCES/EXIT POINTS OF THE SITE TO REDUCE THE AMOUNT OF SOILS CARRIED ONTO ROADWAYS AND OFF SITE.
6. DUST SHALL ALSO BE CONTROLLED AT THE SITE AT ALL TIMES.
7. MONITORING AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES THROUGHOUT THE COURSE OF SITE CONSTRUCTION SHALL BE REQUIRED ON A DAILY BASIS. SEDIMENT SHALL BE REMOVED ONCE THE VOLUME REACHES 1/4 TO 1/2 THE HEIGHT OF THE EROSION CONTROL DEVICE.
8. SOIL STOCKPILES MUST BE STABILIZED OR COVERED AT THE END OF EACH WORKDAY. STOCKPILE SIDE SLOPES SHALL NOT BE GREATER THAN 2:1. ALL STOCKPILES SHALL BE SURROUNDED BY A SEDIMENT CONTROL DEVICE.
9. DISTURBED AREA REMAINING IDLE FOR MORE THAN 14 DAYS SHALL BE TEMPORARILY OR PERMANENTLY STABILIZED.
10. PERMANENT SEEDING SHALL BE UNDERTAKEN IN THE SPRING FROM MARCH THRU MAY, AND IN LATE SUMMER AND EARLY FALL FROM AUGUST THRU OCTOBER 15. DURING PEAK SUMMER MONTHS AND IN THE FALL AFTER OCTOBER 15 WHEN SEEDING IS FOUND TO BE IMPRACTICAL, AN APPROPRIATE TEMPORARY MULCH AND/OR NON-ASPHALTIC SOIL TACKIFIER WITH WINTER RYE SHALL BE APPLIED. PERMANENT SEEDING MAY BE UNDERTAKEN IN THE SUMMER IF PLANS PROVIDE FOR ADEQUATE MULCHING AND WATERING.
11. TEMPORARY SEDIMENT TRAPPING DEVICES MUST NOT BE REMOVED UNTIL PERMANENT STABILIZATION IS ESTABLISHED IN ALL CONSTRUCTION AREAS ASSOCIATED WITH THE PROJECT. SIMILARLY, STABILIZATION MUST BE ESTABLISHED PRIOR TO CONVERTING TEMPORARY SEDIMENT TRAPS/BASINS INTO PERMANENT (POST-CONSTRUCTION) STORMWATER MANAGEMENT FACILITIES. ALL FACILITIES USED FOR TEMPORARY MEASURES SHALL BE CLEANED AND RESTABILIZED PRIOR TO BEING PUT INTO FINAL OPERATION.
12. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED WITHIN 30 DAYS OF REMOVAL OF THE TEMPORARY MEASURES.
13. THE CONTRACTOR SHALL REGULARLY INSPECT THE PERIMETER OF THE PROPERTY TO CLEANUP AND REMOVE LOOSE CONSTRUCTION DEBRIS BEFORE IT LEAVES THE SITE. ALL DEMOLITION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE SITE TO A LEGAL DUMP SITE. ALL TRUCKS LEAVING THE SITE SHALL BE COVERED.
14. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSTITUTE EROSION CONTROL MEASURES ON AN AS NECESSARY BASIS, SUCH THAT EXCESS SOIL EROSION DOES NOT OCCUR. MEASURES SHALL INCLUDE SILT SACKS AND SILT SOCKS AROUND DRAINAGE INLETS, MULCHING AND PLANTING OF DISTURBED AREAS.
15. AFTER INSTALLATION OF EACH DRAINAGE INLET A SILT SACK SHALL BE INSTALLED AROUND THE INLET TO PREVENT SEDIMENT FROM ENTERING THE STORM DRAIN SYSTEM.
16. AT THE END OF CONSTRUCTION ALL DRAINAGE STRUCTURES ARE TO BE CLEANED OF SILT, STONES AND OTHER DEBRIS.
17. DURING CONSTRUCTION THE EROSION CONTROL MEASURES SHALL BE INSPECTED AND CLEANED ONCE PER WEEK AND PRIOR TO ANY PREDICTED STORM EVENT. THE EROSION CONTROL MEASURE SHALL BE CLEANED REGULARLY AND ADJUSTED IF NECESSARY TO ENSURE THAT NO SILT OR DEBRIS LEAVES THE SITE.
18. CONCRETE WASHOUT AREAS SHALL BE CONSTRUCTED WITHIN THE DESIGNATED CONSTRUCTION LAYDOWN AREAS AND SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE. WASHOUT AREAS SHALL BE CONSTRUCTED IN SUFFICIENT SIZE TO CONTAIN ALL CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.

NOT FOR CONSTRUCTION

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PREPARED FOR:
BULL MEADOW, LLC.
2 RACHEL ROAD
BOYLSTON, MA 01505

3	01/09/2017	TOWN COMMENTS
2	11/22/2016	TOWN COMMENTS
1	10/11/2016	TOWN COMMENTS
No.	Date	Revision



73. Marchetti 1/9/17

Drawn By: BRM Designed By: BRM Checked By: JLM

APPROVED BY THE GRAFTON PLANNING BOARD

DATE:

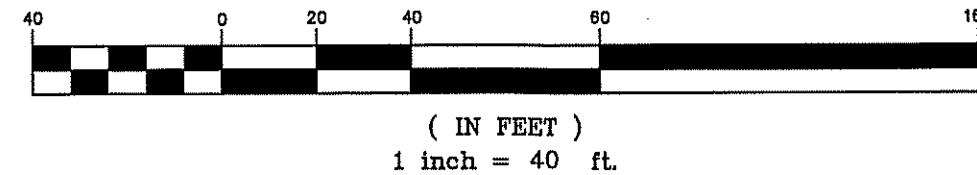
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SEE SHEET 28 FOR PLANNING BOARD CONDITIONS OF APPROVAL

GRAPHIC SCALE



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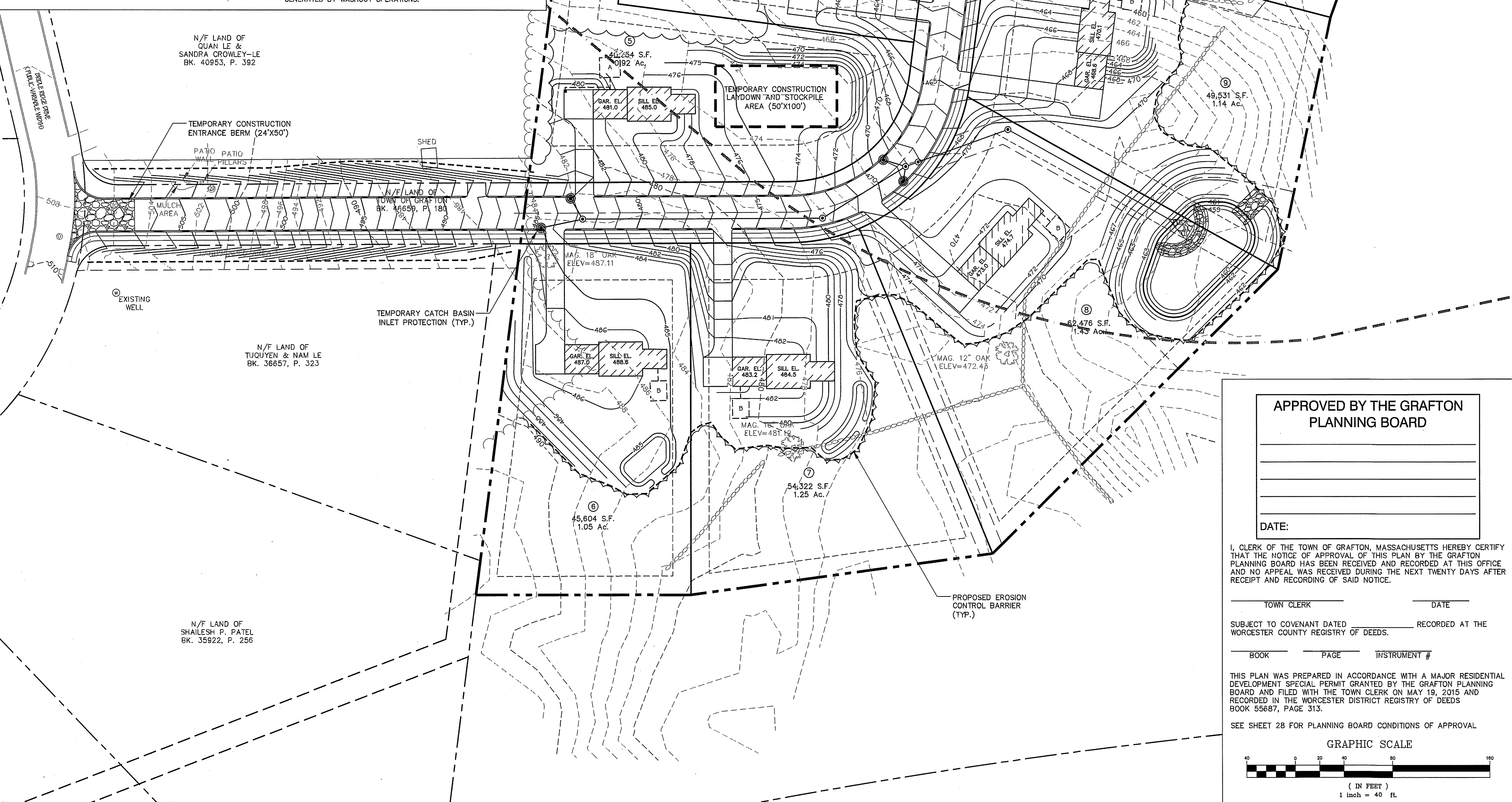
Project Name
Estates at Bull Meadow
Definitive Plan
N. Grafton, MA 01536

Sheet Title
Erosion Control
Plan
(1 of 2)

Job No: 066 Sheet No.
File Name: 0666-CER01
Date: June 10, 2016
Scale: 1"=40' 19
OF 29

CONSTRUCTION EROSION & SEDIMENTATION NOTES:

1. REFERENCE STORM WATER POLLUTION PREVENTION PLAN FOR CONSTRUCTION SEQUENCING/PHASING.
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3. PERIMETER SEDIMENTATION AND SILTATION CONTROL SYSTEMS SHALL BE INSTALLED PRIOR TO SOIL DISTURBANCE. THESE SYSTEMS TO BE INSPECTED AND MAINTAINED ON A PERIODIC BASIS TO CONTROL SOILS ON SITE.
4. AREAS OUTSIDE OF THE PERIMETER SEDIMENT CONTROL SYSTEM MUST NOT BE DISTURBED UNLESS THE APPLICANT HAS OBTAINED PRIOR APPROVAL FROM THE TOWN OF GRAFTON.
5. TEMPORARY CONSTRUCTION BERMS SHALL BE CONSTRUCTED AT ALL ENTRANCES/EXIT POINTS OF THE SITE TO REDUCE THE AMOUNT OF SOILS CARRIED ONTO ROADWAYS AND OFF SITE.
6. DUST SHALL ALSO BE CONTROLLED AT THE SITE AT ALL TIMES.
7. MONITORING AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES THROUGHOUT THE COURSE OF SITE CONSTRUCTION SHALL BE REQUIRED ON A DAILY BASIS. SEDIMENT SHALL BE REMOVED ONCE THE VOLUME REACHES 1/4 TO 1/2 THE HEIGHT OF THE EROSION CONTROL DEVICE.
8. SOIL STOCKPILES MUST BE STABILIZED OR COVERED AT THE END OF EACH WORKDAY. STOCKPILE SIDE SLOPES SHALL NOT BE GREATER THAN 2:1. ALL STOCKPILES SHALL BE SURROUNDED BY A SEDIMENT CONTROL DEVICE.
9. DISTURBED AREA REMAINING IDLE FOR MORE THAN 14 DAYS SHALL BE TEMPORARILY OR PERMANENTLY STABILIZED.
10. PERMANENT SEEDING SHALL BE UNDERTAKEN IN THE SPRING FROM MARCH THRU MAY, AND IN LATE SUMMER AND EARLY FALL FROM AUGUST THRU OCTOBER 15. DURING PEAK SUMMER MONTHS AND IN THE FALL AFTER OCTOBER 15 WHEN SEEDING IS FOUND TO BE IMPRACTICAL, AN APPROPRIATE TEMPORARY MULCH AND/OR NON-ASPHALTIC SOIL TACKIFIER WITH WINTER RYE SHALL BE APPLIED. PERMANENT SEEDING MAY BE UNDERTAKEN IN THE SUMMER IF PLANS PROVIDE FOR ADEQUATE MULCHING AND WATERING.
11. TEMPORARY SEDIMENT TRAPPING DEVICES MUST NOT BE REMOVED UNTIL PERMANENT STABILIZATION IS ESTABLISHED IN ALL CONSTRUCTION AREAS ASSOCIATED WITH THE PROJECT. SIMILARLY, STABILIZATION MUST BE ESTABLISHED PRIOR TO CONVERTING TEMPORARY SEDIMENT TRAPS/BASINS INTO PERMANENT (POST-CONSTRUCTION) STORMWATER MANAGEMENT FACILITIES. ALL FACILITIES USED FOR TEMPORARY MEASURES SHALL BE CLEANED AND RESTABILIZED PRIOR TO BEING PUT INTO FINAL OPERATION. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED WITHIN 30 DAYS OF REMOVAL OF THE TEMPORARY MEASURES.
12. THE CONTRACTOR SHALL REGULARLY INSPECT THE PERIMETER OF THE PROPERTY TO CLEANUP AND REMOVE LOOSE CONSTRUCTION DEBRIS BEFORE IT LEAVES THE SITE. ALL DEMOLITION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE SITE TO A LEGAL DUMP SITE. ALL TRUCKS LEAVING THE SITE SHALL BE COVERED.
13. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSTITUTE EROSION CONTROL MEASURES ON AN AS NECESSARY BASIS, SUCH THAT EXCESS SOIL EROSION DOES NOT OCCUR. MEASURES SHALL INCLUDE SILT SACKS AND SILT SOCKS AROUND DRAINAGE INLETS, MULCHING AND PLANTING OF DISTURBED AREAS.
14. AFTER INSTALLATION OF EACH DRAINAGE INLET A SILT SACK SHALL BE INSTALLED AROUND THE INLET TO PREVENT SEDIMENT FROM ENTERING THE STORM DRAIN SYSTEM.
15. AT THE END OF CONSTRUCTION ALL DRAINAGE STRUCTURES ARE TO BE CLEANED OF SILT, STONES AND OTHER DEBRIS.
16. DURING CONSTRUCTION THE EROSION CONTROL MEASURES SHALL BE INSPECTED AND CLEANED ONCE PER WEEK AND PRIOR TO ANY PREDICTED STORM EVENT. THE EROSION CONTROL MEASURE SHALL BE CLEANED REGULARLY AND ADJUSTED IF NECESSARY TO ENSURE THAT NO SILT OR DEBRIS LEAVES THE SITE.
17. DESIGNATED CONSTRUCTION LAYDOWN AREAS SHALL BE CONSTRUCTED WITHIN THE DESIGNATED CONSTRUCTION LAYDOWN AREAS AND SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE. WASHOUT AREAS SHALL BE CONSTRUCTED IN SUFFICIENT SIZE TO CONTAIN ALL CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.



APPROVED BY THE GRAFTON
PLANNING BOARD

DATE:

I, CLERK OF THE TOWN OF GRAFTON, MASSACHUSETTS HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE GRAFTON PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL HAS BEEN RECEIVED DURING THE NEXT TWENTY DAYS AFTER RECEIPT AND RECORDING OF SAID NOTICE.

TOWN CLERK _____ DATE _____

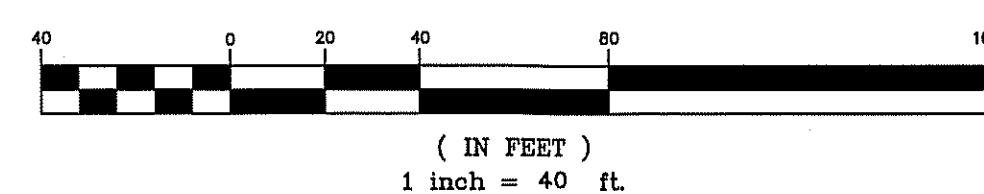
SUBJECT TO COVENANT DATED _____ RECORDED AT THE
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BOOK _____ PAGE _____ INSTRUMENT # _____

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SEE SHEET 28 FOR PLANNING BOARD CONDITIONS OF APPROVAL

GRAPHIC SCALE



NOT FOR CONSTRUCTION

THESE PLANS WERE PREPARED FOR THE PURPOSE OF OBTAINING STATE AND LOCAL PERMITS AND ARE NOT INTENDED TO BE USED AS CONSTRUCTION DOCUMENTS.

PREPARED FOR:
BULL MEADOW, LLC.
2 RACHEL ROAD
BOYLSTON, MA 01505

No.	Date	Revision
3	01/09/2017	TOWN COMMENTS
2	11/22/2016	TOWN COMMENTS
1	10/11/2016	TOWN COMMENTS



Drawn By: BRM Designed By: BRM Checked By: *7/20/17*

McCarty Engineering, Inc.
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Project Name

Estates at Bull Meadow
Definitive Plan
N. Grafton, MA 01536

Sheet Title

Erosion Control
Plan
(2 of 2)

Job No: 066

File Name: 066P-CER02

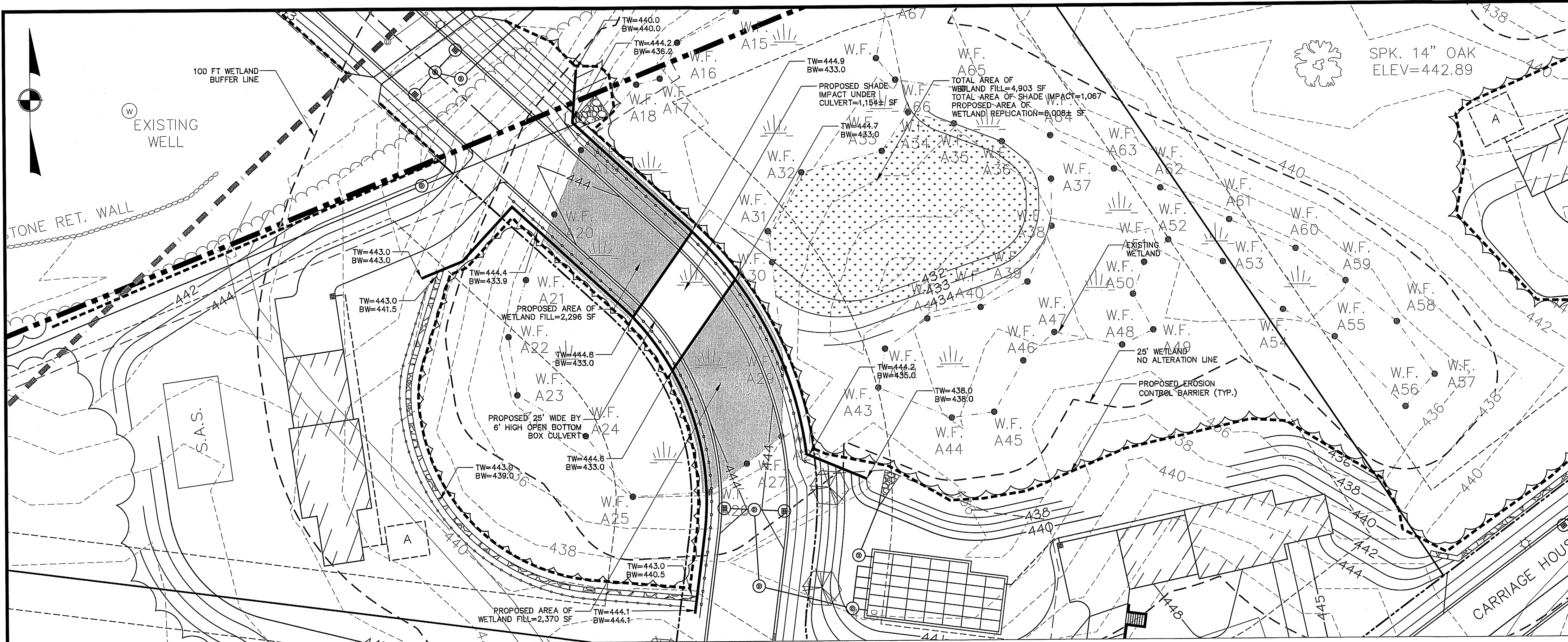
Date: June 10, 2016

Scale: 1"=40'

Sheet No.

20

OF 29



BORDERING VEGETATED WETLAND REPLICATION CONSTRUCTION PROTOCOL:

1. THE FOLLOWING PROTOCOL CONFORMS TO THE GENERAL STANDARDS IN THE MA WETLANDS PROTECTION ACT REGULATIONS AT 310 CMR 10.55(4)(b)
2. THE WETLAND BOUNDARIES (I.E., DOWNGRADE EDGES OF THE WETLAND REPLICATION AREA) WILL BE MARKED IN THE FILED.
3. PRIOR TO THE START OF EARTH-MOVING ACTIVITIES IN THE REPLICATION AREA, AN EROSION CONTROL BARRIER OF PROPERLY INSTALLED SILTATION FENCE (I.E. THE BOTTOM FEW INCHES OF THE SILTATION FENCE INSTALLED IN A NARROW TRENCH AND THE TRENCH FILLED WITH SOIL AROUND THE SILTATION FENCE) WILL BE INSTALLED ALONG THE WETLAND BOUNDARIES BETWEEN THE WETLAND AND THE WETLAND REPLICATION AREA. THE WETLAND REPLICATION AREA WILL THEN BE CLEARED AND GRUBBED, WITH THE EXCEPTION OF THE TREES THAT HAVE BEEN MARKED TO BE SAVED.
4. THE PROPOSED FINAL GRADE OF THE REPLICATION AREA SHOULD APPROXIMATE THE ELEVATION OF THE ADJACENT WETLAND AREAS (432±), AS NOTED ON THE SITE PLANS. THE REPLICATION AREA WILL BE EXCAVATED TO A DEPTH OF 12 INCHES BELOW THE PROPOSED FINAL GRADE. THE EXCAVATION AND PLANTING WORK WILL BE CLOSELY SUPERVISED BY A QUALIFIED WETLAND SCIENTIST. MINOR MODIFICATIONS TO THE PROPOSED GRADING MAY BE MADE IN THE FILE BY THE WETLAND SCIENTIST IN RESPONSE TO OBSERVED SUBSURFACE HYDROLOGIC CONDITIONS. ALL EXCAVATED MATERIAL WILL BE DISPOSED OF AWAY FROM ALL WETLAND RESOURCE AREAS.
5. EXISTING TOPSOIL WITHIN THE IMPACT AREA WILL BE EXCAVATED, STOCKPILED AND KEPT MOIST BY WATERING AND/OR COVERING OR IMMEDIATELY TRANSPORTED TO THE REPLICATION AREA.
6. RELOCATED WETLAND TOPSOIL WILL BE SUPPLEMENTED WITH A 1:1 MIXTURE OF HIGH QUALITY, LOAMY TOPSOIL AND LEAF MOLD COMPOST, AS NECESSARY, TO APPROXIMATE 12 INCHES IN THICKNESS THROUGHOUT THE REPLICATION AREA. THE TOPSOIL SHALL HAVE A MINIMUM OF 9% ORGANIC MATTER. THE SUBSTRATE WILL BE ROUGHLY GRADED TO PROVIDE AN APPROPRIATE MICROTOPOGRAPHY. A MINIMUM OF 4 INCHES OF LOAMY TOPSOIL WILL BE APPLIED TO THE SIDE-SLOPES OF THE WETLAND REPLICATION AREA. THE SIDE SLOPES SHOULD BE STABILIZED AS NECESSARY TO PREVENT EROSION.
7. AN EROSION CONTROL BARRIER COMPRISING ONLY TOED-IN SILTATION FENCE WILL BE PROPERLY INSTALLED BETWEEN THE COMPLETED REPLICATION AREA AND THE ADJACENT UPLAND SIDE SLOPES.
8. PLANTING WILL BE DONE ONLY DURING THE BEGINNING (APRIL 15 THROUGH JUNE) OR END (SEPTEMBER 1 TO NOVEMBER 15) OF THE GROWING SEASON. PLANTING IN THE MID-GROWING SEASON IS ONLY ACCEPTABLE IF IRRIGATION IS PROVIDED. THE PLANTINGS AND SEED MIXTURE IDENTIFIED IN THE FOLLOWING TABLE WILL BE PLANTED IN THE REPLICATION AREA UNLESS THE HERBACEOUS LAYER CAN BE TRANSPLANTED INTO THE REPLICATION AREA.
9. THE REPLICATION AREA WILL BE MULCHED WITH 1 TO 2 INCHES OF LEAF COMPOST OR WEED FREE STRAW TO PROVIDE FOR TEMPORARY EROSION CONTROL AND MOISTURE RETENTION.
10. THE SIDE-SLOPES OF THE WETLAND REPLICATION AREA WILL BE SEEDED WITH A GRASS/WILDFLOWER OR CONSERVATION MIXTURE DESIGNED TO PROVIDE PERMANENT COVER. AFTER SEEDING, THE SIDE-SLOPES WILL BE MULCHED WITH A THIN LAYER OF STRAW TO PROVIDE FOR TEMPORARY EROSION CONTROL.
11. THE REPLICATION AREAS WILL BE INSPECTED, BY A QUALIFIED WETLAND SCIENTIST, AT THE END OF EACH GROWING SEASON FOR A MINIMUM OF THREE YEARS OR UNTIL SUCH TIME AS THE REQUIRED 75% OF VEGETATIVE COVER WITH WETLAND SPECIES HAS BEEN ESTABLISHED. WRITTEN RESULTS OF THESE INSPECTIONS WILL BE SUBMITTED TO THE CONSERVATION COMMISSION. INVASIVE SPECIES WITHIN THE REPLICATION AREA OR WITHIN 25-FEET OF THE REPLICATION AREA SHALL BE HAND PULLED OR CUT.
12. AFTER THE WETLAND REPLICATION AREA HAS BECOME VEGETATIVELY STABILIZED AND FOLLOWING APPROVAL OF THE ISSUING AUTHORITY, THE SILTATION FENCE AND ALL WOODEN STAKES WILL BE REMOVED AND DISPOSED OF PROPERLY.

PLANTING PLAN FOR WETLAND REPLICATION AREA:

SPECIES: SIZE: SPACING:	NUMBER:
SAPPLINGS; 6 TO 8' HEIGHT, CONTAINER OR BALLED, BURLAPPED; 15' ON-CENTER AVERAGE	
RED MAPLE (ACER RUBRUM)	26
SHRUBS; 2.5 TO 3' IN HEIGHT, CONTAINER, 6' ON-CENTER AVERAGE SPACING	167 TOTAL*
HIGHBUSH BLUEBERRY (VACCINIUM CORYMBOSUM)	
NANNYBERRY (VIBURNUM LENTAGO)	
WINTERBERRY (ILEX VERTICILLATA)	
SILKY DOGWOOD (CORNUS AMOMUM)	
HERBACEOUS (PLUGS, SEED OF PLUGS NOT AVAILABLE)	
TUSsock SEDGE (CAREX STRICTA)	38
JOE-PYE-WEED (EUPATORIUM MACULATUM/PURPUREUM)	38
BONESET (EUPATORIUM PERFOLIATUM)	38
LURID SEDGE (CAREX LURIDA)	38
SOFT RUSH (JUNCUS EFFUSES)	38
SENSITIVE FERN (ONOCLEA SENSIBILIS)	10
NEW ENGLAND WETLAND PLANTS, NEW ENGLAND WETMIX (OR EQUIVALENT)	2.0 lbs.

* DEPENDING UP AVAILABILITY FROM LOCAL NURSERY STOCK, THESE SPECIES MAY BE SUBSTITUTED WITH SIMILAR NATIVE SPECIES

WETLAND CROSSING SEQUENCE OF WORK:

- INSTALL EROSION CONTROL BARRIER (ECB) AT LOCATION SHOWN ON PLAN.
- INSTALL ADDITIONAL ECB PROTECTION THROUGH SECTION OF WETLAND AT PROPOSED CULVERT.
- CLEAR TREES IN WORK AREA WITHOUT CROSSING EQUIPMENT OVER THE SECTION OF WETLAND TO REMAIN.
- ALL WORK IS TO BE ACCESSED FROM EITHER SIDE OF THE PROPOSED CROSSING. ONLY FOOT TRAFFIC IS PERMITTED IN RESOURCE AREA.
- REMOVE & DISPOSE STUMPS.
- STRIP & STOCKPILE WETLAND SOILS TO BE USED IN REPLICATION AREA. IF WITHIN 100FT WETLAND BUFFER STOCKPILE SHOULD BE SURROUNDED IN HAYBALES & COVERED IN 4 MIL POLY.
- FORM & POUR CONCRETE FOOTING FOR OPEN BOTTOM CULVERT.
- INSTALL CULVERT & ANCHOR TO FOOTING.
- PREPARE CRUSHED STONE BASE FOR PRECAST CONCRETE BLOCK RETAINING WALLS.
- IF DEWATERING IS REQUIRED:
 - USE ELECTRIC SUBMERSIBLE PUMP.
 - USE SUFFICIENT HOSE LENGTHS TO PUMP TO TEMP DRAINAGE SWALE.
 - CONSTRUCT 10X10X1' APRON OF 6-12" RIP RAP AT DISCHARGE POINT.
 - PERIODICALLY INSPECT DISCHARGE POINT & SWALE FOR BUILDUP OF SEDIMENT.
- INSTALL PRECAST CONCRETE BLOCK WALLS.
- IMPORT, PLACE, & COMPACT STRUCTURAL FILL BETWEEN WALLS.
- CONTINUE WITH WALL CONSTRUCTION & FILL PLACEMENT TO SUBGRADE.
- INSTALL TEMPORARY FENCE AT TOP OF WALL.
- INSTALL UTILITIES IN CROSSING AREA.
- INSTALL GRAVEL FOR ROADWAY BASE.
- INSTALL BINDER COURSE OF PAVEMENT.
- INSTALL GRANITE CURBING.
- CONSTRUCT CONCRETE SIDEWALK.
- INSTALL GUARDRAIL & FENCING.
- LOAM & HYDROSEED SHOULDERS.
- PROCEED WITH CONSTRUCTION OF WETLAND REPLICATION AREA.

APPROVED BY THE GRAFTON PLANNING BOARD

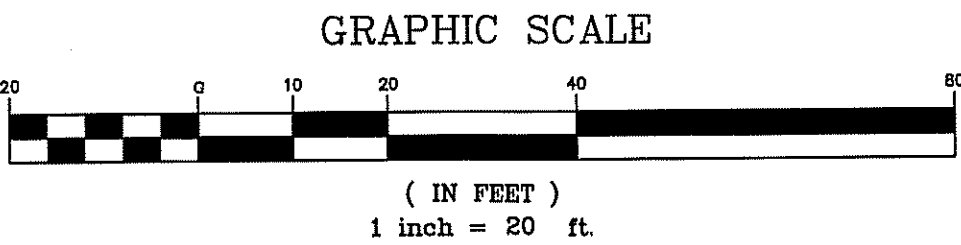
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SEE SHEET 28 FOR PLANNING BOARD CONDITIONS OF APPROVAL



NOT FOR CONSTRUCTION
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PREPARED FOR:
BULL MEADOW, LLC.
2 RACHEL ROAD
BOYLSTON, MA 01505

No.	Date	Revision
2	01/09/2017	TOWN COMMENTS
1	11/22/2016	TOWN COMMENTS



Drawn By: JLL Designed By: BRM Checked By: JLL

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Project Name
Estates at Bull Meadow
Definitive Plan
N. Grafton, MA 01536

Sheet Title
Wetland Crossing & Replication Area Plan

Job No: 066
File Name: 066P-WRA01
Date: October 11, 2016
Scale: 1"=20'
Sheet No. **21**
OF 29

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SEQUENCE OF WORK, SUBDIVISION CONSTRUCTION:

- LIMIT OF CLEARING TO BE MARKED OUT FOR ENTIRE PROJECT.
- INSTALL EROSION CONTROL BARRIER AND CONSTRUCTION ENTRANCE.
- CUT TREES & CHIP - CHIPS TO BE HAULED OFF SITE.
- REMOVE & DISPOSE STUMPS. STUMPS CAN BE GROUND ON-SITE AND GRINDING TO BE HAULED OFF SITE. WHOLE STUMPS CAN BE HAULED OFFSITE TO A DISPOSAL FACILITY.
- STRIP AND STOCKPILE TOP & SUBSOIL. MAINTAIN A STOCKPILE ON SITE, OUTSIDE OF THE 100 FT BUFFER ZONE, SUFFICIENT TO LOAM LOTS AND DISTURBED AREAS AT THE COMPLETION OF CONSTRUCTION. EXCESS LOAM CAN BE HAULED OFF SITE.
- COMPLETE ROUGH GRADING OF THE SITE TO ESTABLISH SUBGRADE. INFILTRATION BASINS 1,2,3,4 SHALL BE ESTABLISHED TO WITHIN 1FT OF FINISH GRADE. CONSTRUCT TEMPORARY SWALES AS NEEDED TO DIRECT RUNOFF TO THE INFILTRATION BASINS. BASINS SHOULD BE MONITORED THROUGHOUT THE CONSTRUCTION PROCESS TO ENSURE THAT THEY DO NOT BECOME SILTED UP.

- INSTALL STORMWATER DRAINAGE SYSTEMS STARTING WITH CROSS COUNTRY DRAINAGE THAT PICKS UP DISCHARGE FROM THE NORTH GRAFTON ESTATES DETENTION BASIN. ONCE CROSS COUNTRY DRAIN IS COMPLETE, DRAINAGE IMPROVEMENTS SHOULD BE INSTALLED STARTING AT THE INFILTRATION BASINS AND WORKING UPSTREAM. AS EACH CATCHBASIN IS INSTALLED, IT SHOULD BE EQUIPPED WITH A CATCHBASIN INLET FILTER. FILTERS SHOULD BE INSPECTED REGULARLY & CLEANED AS NEEDED.
- INSTALLATION OF WETLANDS CROSSING: SEE SEPARATE SCOPE OF WORK ON WETLAND CROSSING AND REPLICATION AREA PLAN.
- INSTALLATION OF WATER MAINS & SERVICE STUBS.
- INSTALLATION OF ELECTRIC CONDUIT.
- INSTALLATION OF ROADWAY GRAVEL.
- INSTALLATION OF BINDER COURSE OF PAVEMENT.
- INSTALLATION OF CURBING.
- ONCE BINDER COURSE OF PAVEMENT & CURBS ARE INSTALLED, WORK CAN PROCEED ON THE INDIVIDUAL HOUSE LOTS.

- TYPICAL HOUSE LOT SEQUENCED: LOTS WERE CLEARED, STUMPED & STRIPPED AS PART OF ROADWAY CONSTRUCTION SEQUENCE.
- EXCAVATE FOR FOUNDATIONS.
- FORM & POUR CONCRETE FOUNDATION. EXCAVATE PIT FOR WASHOUT OF TRUCK TOOLS & EQUIPMENT.
- BACKFILL FOUNDATION.
- SUB-GRADING OF LOT.
- HOUSE CONSTRUCTION: FRAME, ROOF, SIDE, INTERIOR CONSTRUCTION ETC.
- INSTALLATION OF SEPTIC SYSTEM.
- INSTALLATION OF WATER SERVICE.
- INSTALLATION OF UNDERGROUND ELECTRIC SERVICE.
- INSTALLATION OF GAS SERVICE.
- FINAL GRADING OF LOT.
- INSTALLATION OF GRAVEL FOR DRIVEWAY.
- INSTALLATION OF HARDSCAPES (WALKWAYS, PATIOS, ETC.).
- PAVE BINDER COURSE OF DRIVEWAY.
- LOAM & LANDSCAPE INSTALLATION.
- INSTALLATION OF TOP COAT OF DRIVEWAY.
- HYDROSEED.

- INSTALLATION OF CONCRETE SIDEWALKS.
- FINAL SHAPING OF INFILTRATION BASINS. INSTALLATION OF FOREBAYS, ETC.
- INSTALLATION OF STREET TREES.
- INSTALLATION OF FENCING.
- INSTALLATION OF SCREENED LOAM ON ALL REMAINING DISTURBED AREAS.
- CLEAR ALL CATCHBASIN SUMPS & FILTERS.
- CLEAN & INSPECT ALL ROADWAY SURFACES.
- CUT & PATCH ANY DAMAGED SECTIONS OF BINDER.
- SAWCUT CONTROL JOINTS WHERE NEW ROADS MEET EXISTING ROADS.
- INSTALLATION OF TOP COURSE OF PAVEMENT & SIGNAGE.
- PREPARE AS-BUILT PLANS.

WETLAND CROSSING SEQUENCE OF WORK:

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APPROVED BY THE GRAFTON PLANNING BOARD

DATE:

TOWN CLERK

DATE

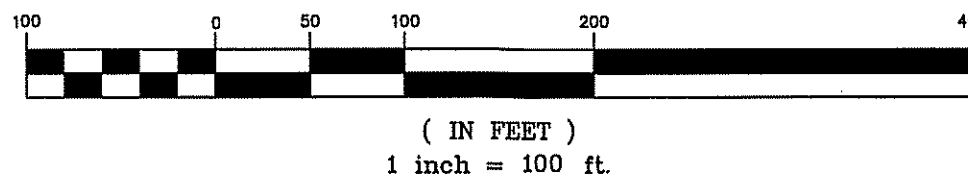
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BOOK PAGE INSTRUMENT #

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SEE SHEET 28 FOR PLANNING BOARD CONDITIONS OF APPROVAL

GRAPHIC SCALE



LEGEND:

①

PROPOSED LOT NUMBER

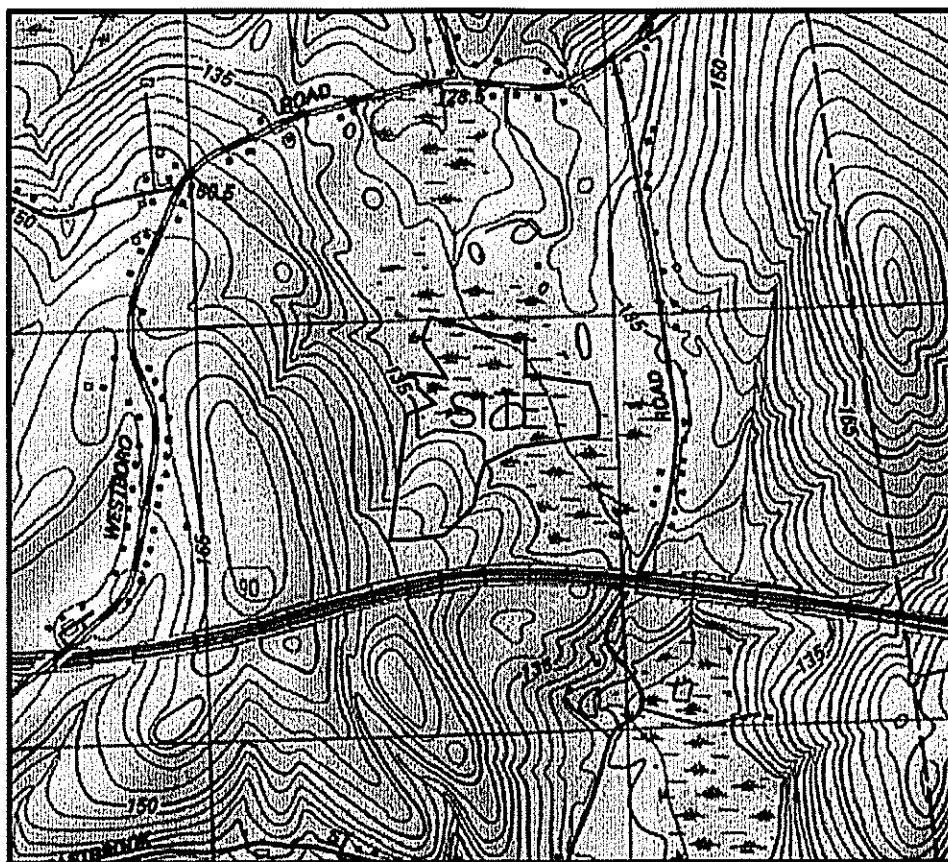
PHASE 1 WATERLINE EXTENSION TO OLD WESTBOROUGH RD.

PHASE 2 ROADWAY/DRAINAGE/UTILITY CONSTRUCTION

PHASE 3 WETLAND CROSSING

LOCUS PLAN

1"=1,500 FT.±



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B. Marchetti 1/9/17

Drawn By: JLL
Designed By: BRM
Checked By: 737207

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Sheet Title

Construction Phasing
Plan

Job No: 066

File Name: 066P-CSP01

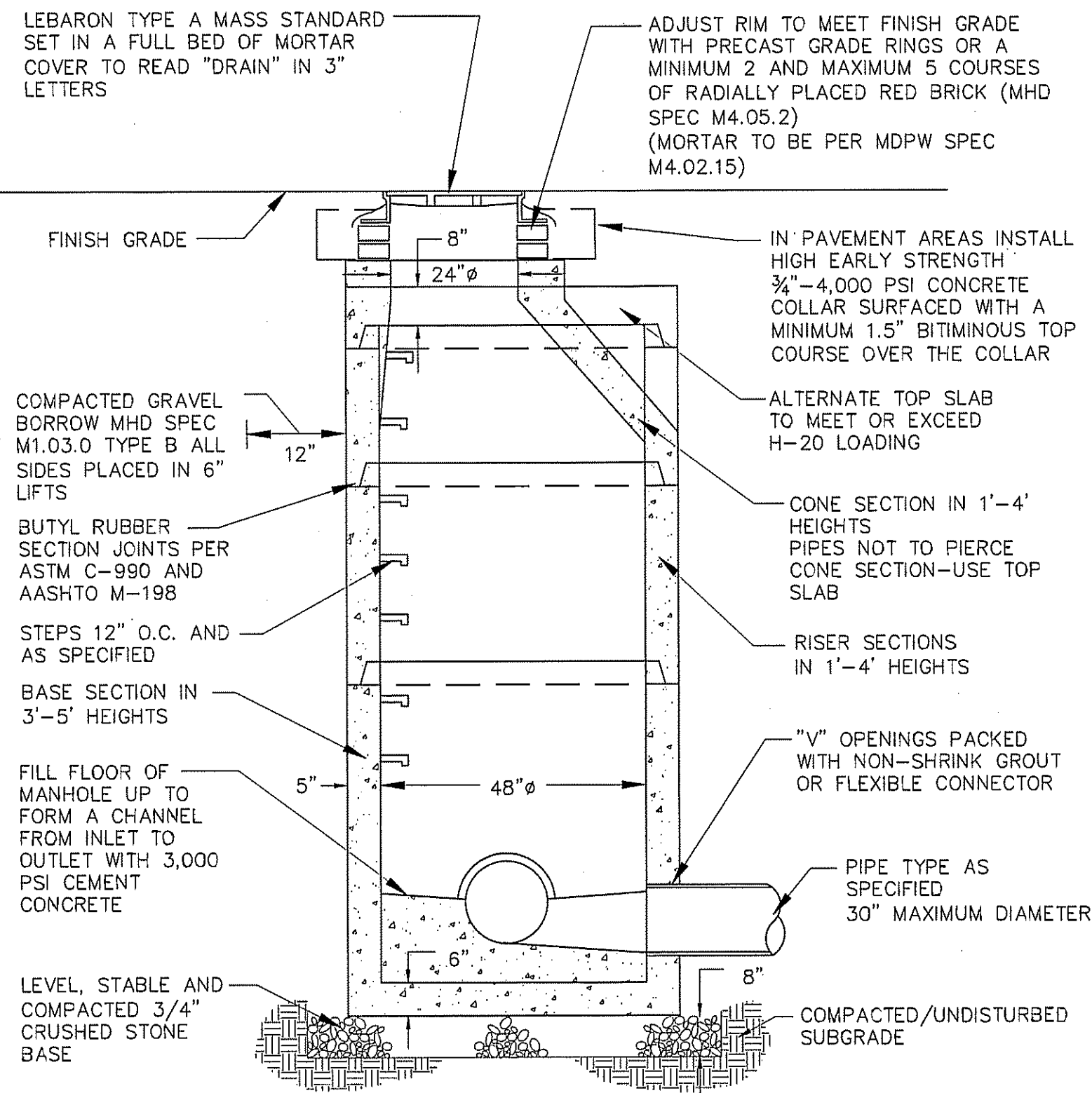
Date: October 11, 2016

Scale: 1"=100'

Sheet No.

22

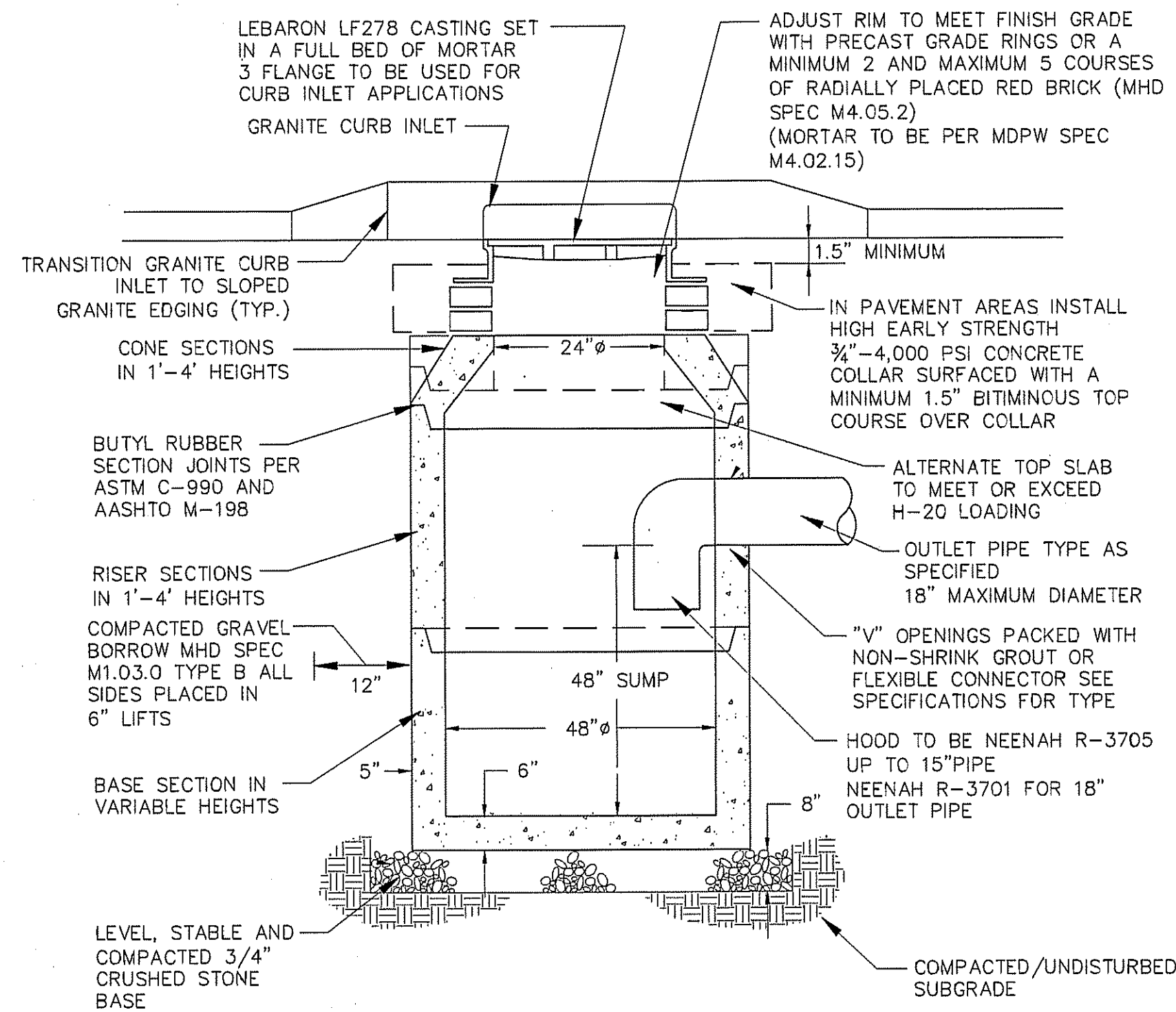
OF 29



- NOTES:
1. EXCAVATION TO ALLOW FOR FREE TRAVEL OF COMPACTION EQUIPMENT
 2. ALL COMPACTION TO A MINIMUM 95 PERCENT DRY DENSITY DETERMINED BY ASTM D1557
 3. ALL PRECAST TO MEET OR EXCEED ASTM C-478 AND ASSHTO M 199 SPECIFICATIONS
 4. REINFORCED STEEL TO MEET OR EXCEED ASTM A185 AND H-20 LOADING REQUIREMENTS
 5. ALL PRECAST CONCRETE TO BE 4,000 PSI MINIMUM AND MEET ASTM C-478 (6.1)
 6. IF NO STEPS ARE SPECIFIED THAN AS THE LOCAL MUNICIPALITY REQUIRES OR IF NO MUNICIPALITY REQUIREMENTS THEN COPOLYMER POLYPROPYLENE COATED REINFORCED PER ASTM C-478 AND OSHA (STD 1-1.9)
 7. CONTRACTOR TO CONFIRM WITH CITY OR TOWN DPW THAT BRICK INVERTS ARE NOT A REQUIREMENT
 8. FILL ALL INTERNAL AND EXTERNAL HOLES WITH NON-SHRINK GROUT

PRECAST CONCRETE DRAIN MANHOLE DETAIL

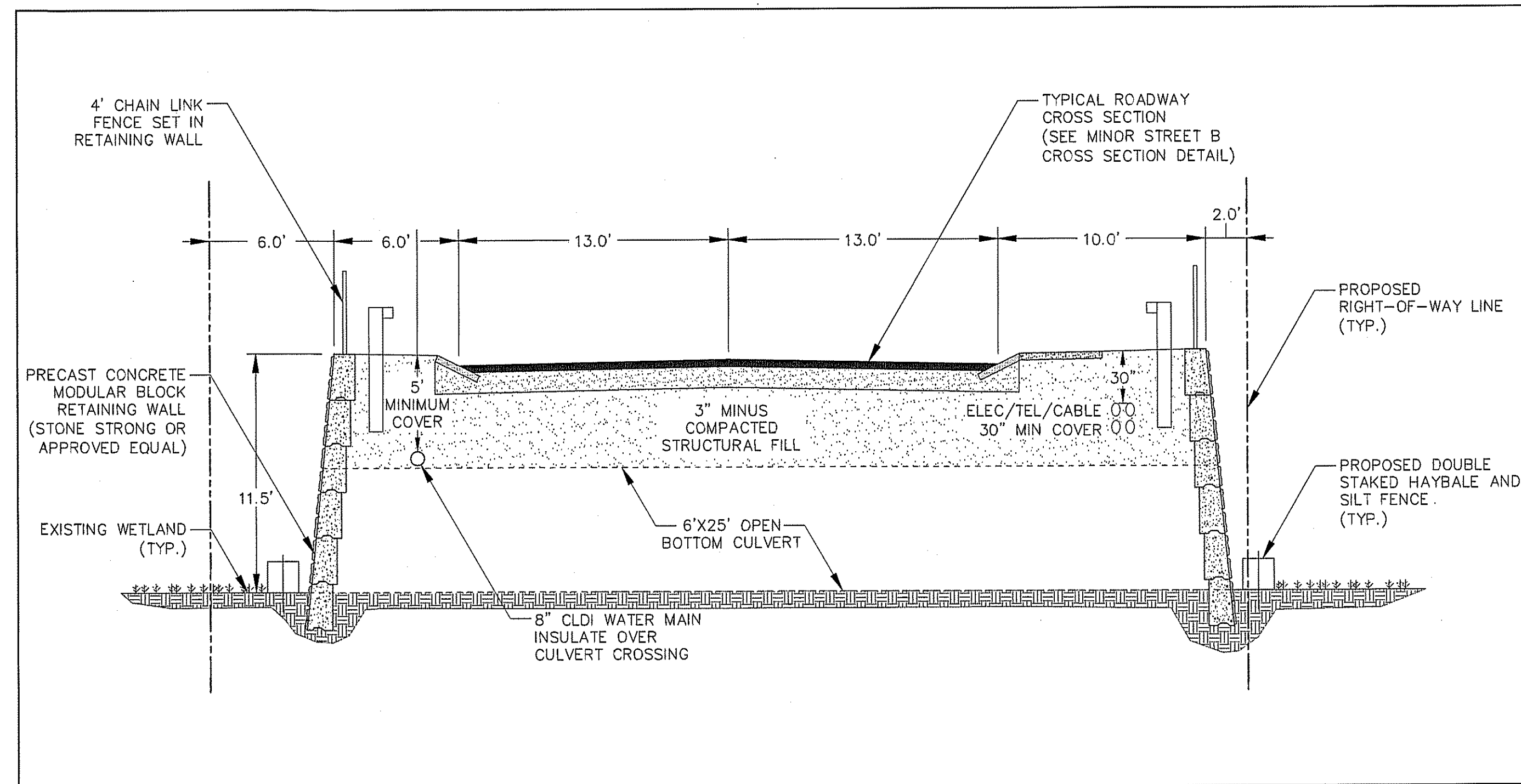
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1. EXCAVATION TO ALLOW FOR FREE TRAVEL OF COMPACTION EQUIPMENT
 2. ALL COMPACTION TO A MINIMUM 95 PERCENT DRY DENSITY DETERMINED BY ASTM D1557
 3. ALL PRECAST TO MEET OR EXCEED ASTM C-478 AND ASSHTO M 199 SPECIFICATIONS
 4. REINFORCED STEEL TO MEET OR EXCEED ASTM A185 AND H-20 LOADING REQUIREMENTS
 5. ALL PRECAST CONCRETE TO BE 4,000 PSI MINIMUM AND MEET ASTM C-478 (6.1)
 6. ALL INTERIOR HOLES TO BE SEALED WITH NON-SHRINK GROUT
 7. MIN. STRUCTURE DEPTH SHALL BE 7.5 FT.

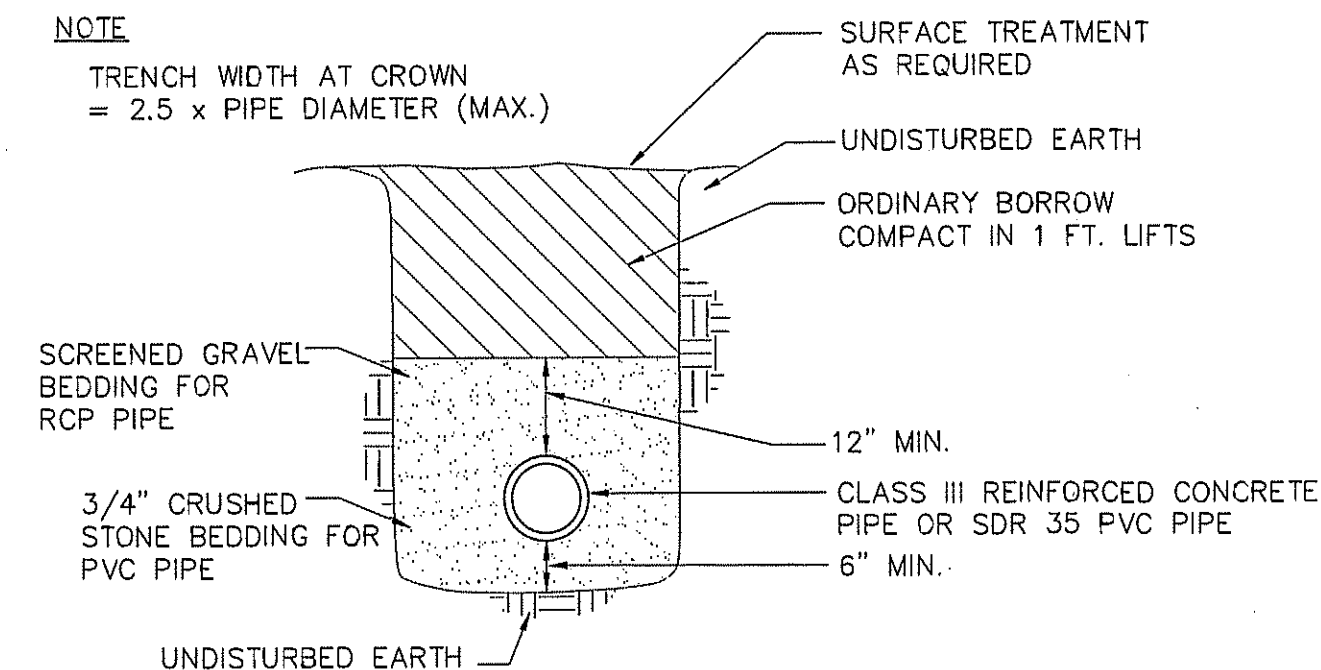
PRECAST CONCRETE CATCH BASIN DETAIL

N.T.S.



WETLAND CROSSING CROSS SECTION

SCALE: 1"=50'



DRAIN PIPE TRENCH DETAIL

N.T.S.

APPROVED BY THE GRAFTON PLANNING BOARD

DATE:

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SEE SHEET 28 FOR PLANNING BOARD CONDITIONS OF APPROVAL

NOT FOR CONSTRUCTION

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PREPARED FOR:
BULL MEADOW, LLC.
2 RACHEL ROAD
BOYLSTON, MA 01505

No.	Date	Revision
3	01/09/2017	NO CHANGE
2	11/22/2016	TOWN COMMENTS
1	10/11/2016	TOWN COMMENTS



Drawn By: BRM Designed By: BRM Checked By: *BRM*

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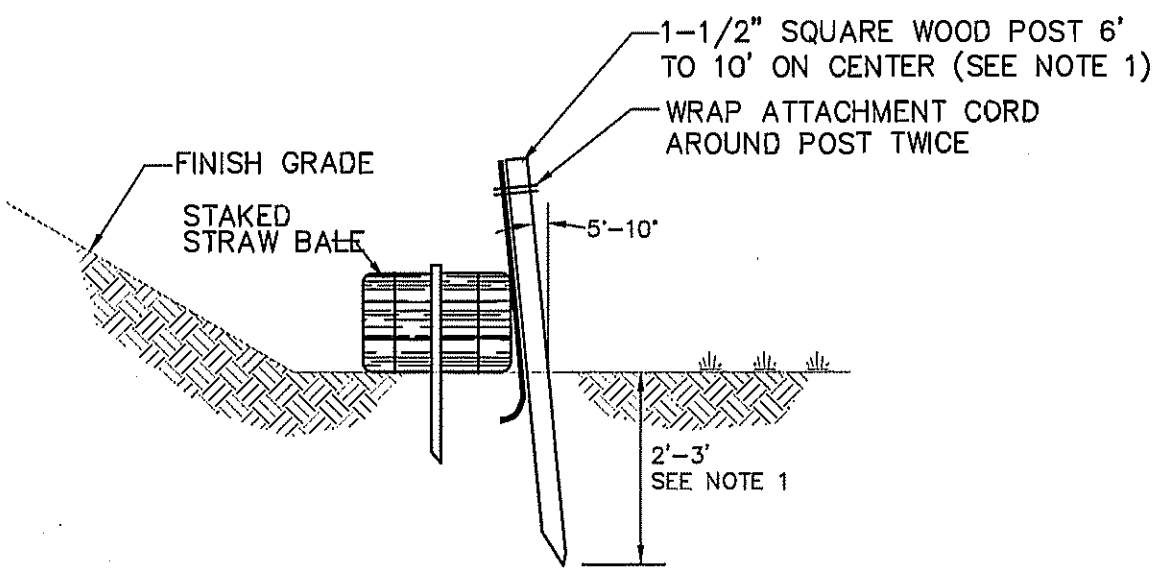
Project Name
Estates at Bull Meadow
Definitive Plan
N. Grafton, MA 01536

Sheet Title
Construction Details
(1 of 4)

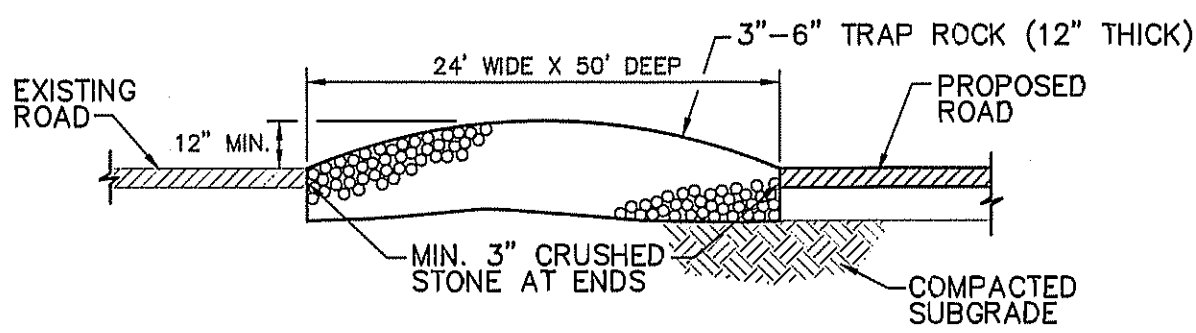
Job No: 066
File Name: 066P-CDT01
Date: June 10, 2016
Scale: AS SHOWN
Sheet No. 23 OF 28

NOTES:

1. DEPTH MAY VARY WITH TRIBUTARY AREA: 2 FT. FOR 100 SF/LF FENCE; 3 FT. FOR 500 SF/LF FENCE, UNLESS POST IS TO BE SET IN PEAT THEN 3 FT. OR DEPTH POSSIBLE BY PUSHING BY HAND SHALL BE REQUIRED.
2. STRAW WATTLES MAY BE USED A SUBSTITUTE TO STAKED STRAWBALES WITH PRIOR APPROVAL OF THE LOCAL CONSERVATION COMMISSION.



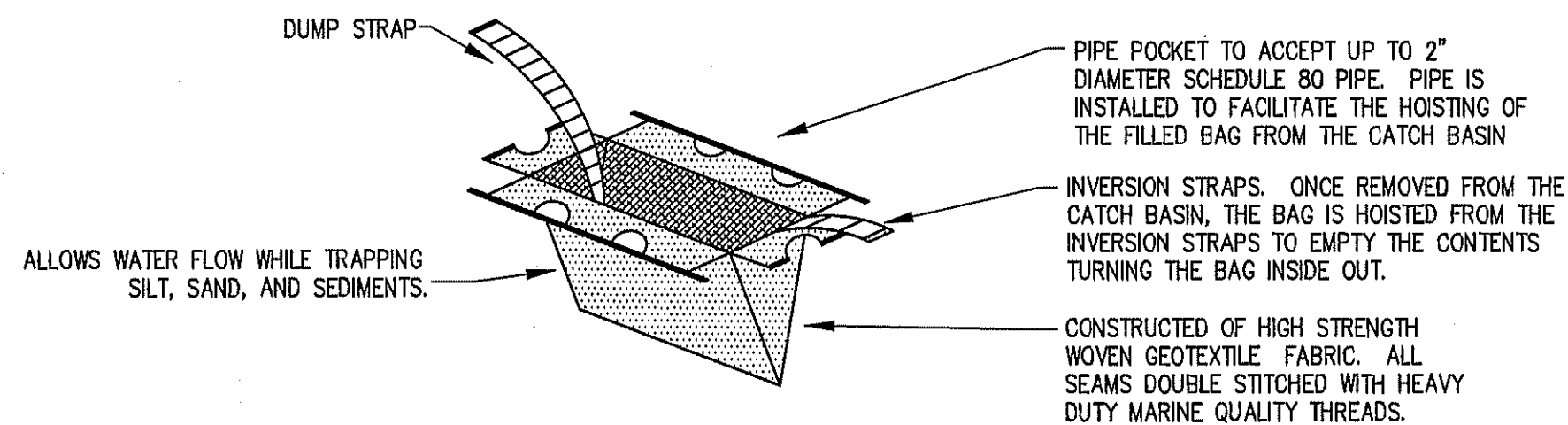
STRAW BALE / SILT FENCE DETAIL
N.T.S.



NOTES:

1. THE PURPOSE OF THIS TEMPORARY BERM IS TO REMOVE MUD FROM THE TIRES OF VEHICLES LEAVING THE SITE DURING CONSTRUCTION.
2. PROVIDE LEVEL AREA OF CRUSHED STONE 50 FEET IN FROM EDGE OF EXISTING ROAD.

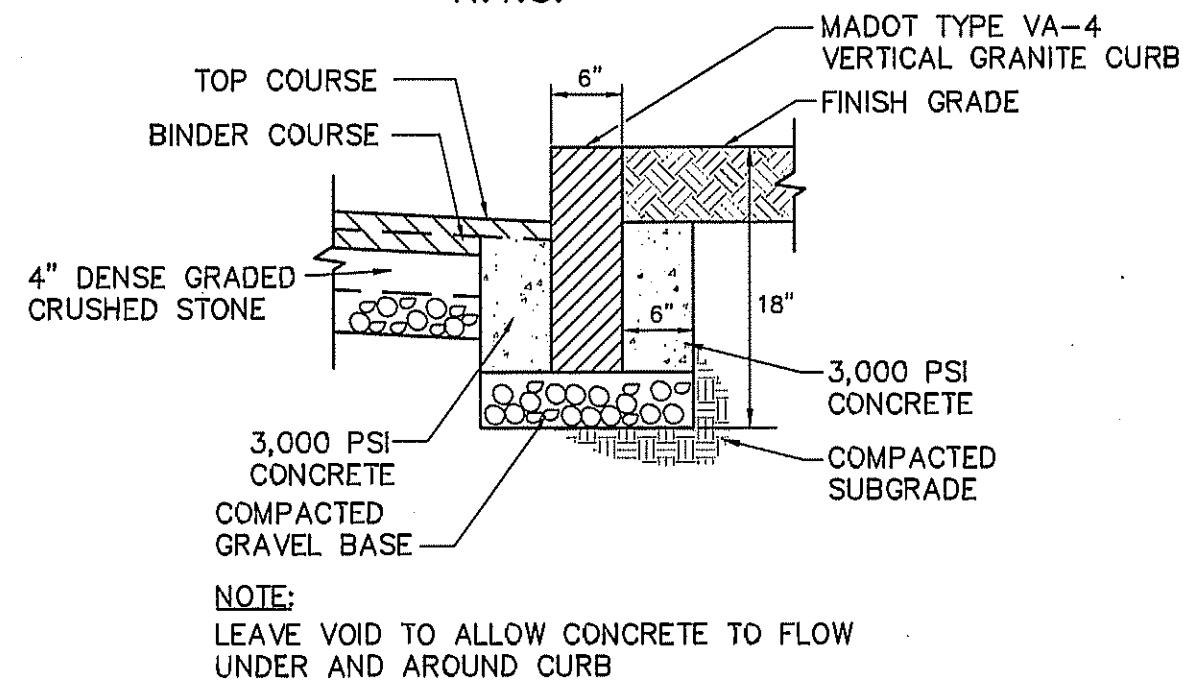
TEMPORARY ENTRANCE BERM
N.T.S.



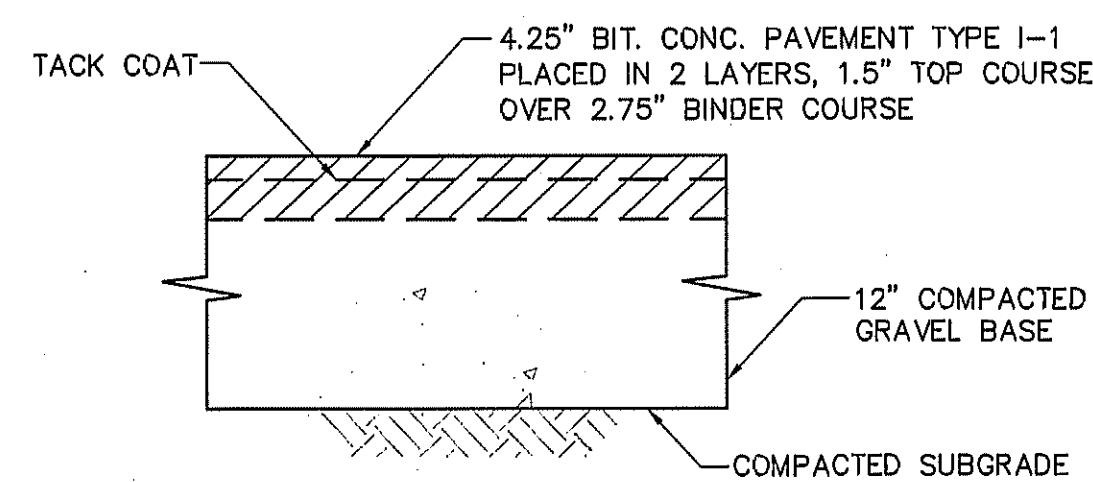
NOTES:

1. PRODUCT TO BE "SILT SACK" MANUFACTURED BY REED AND GRAHM, INC. SACRAMENTO, CA, OR APPROVED EQUAL.

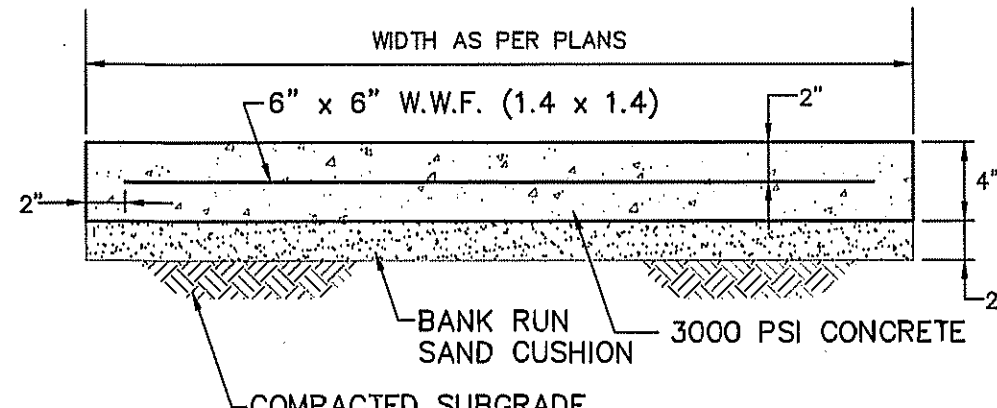
TEMPORARY INLET PROTECTION
N.T.S.



VERTICAL GRANITE CURB DETAIL
N.T.S.

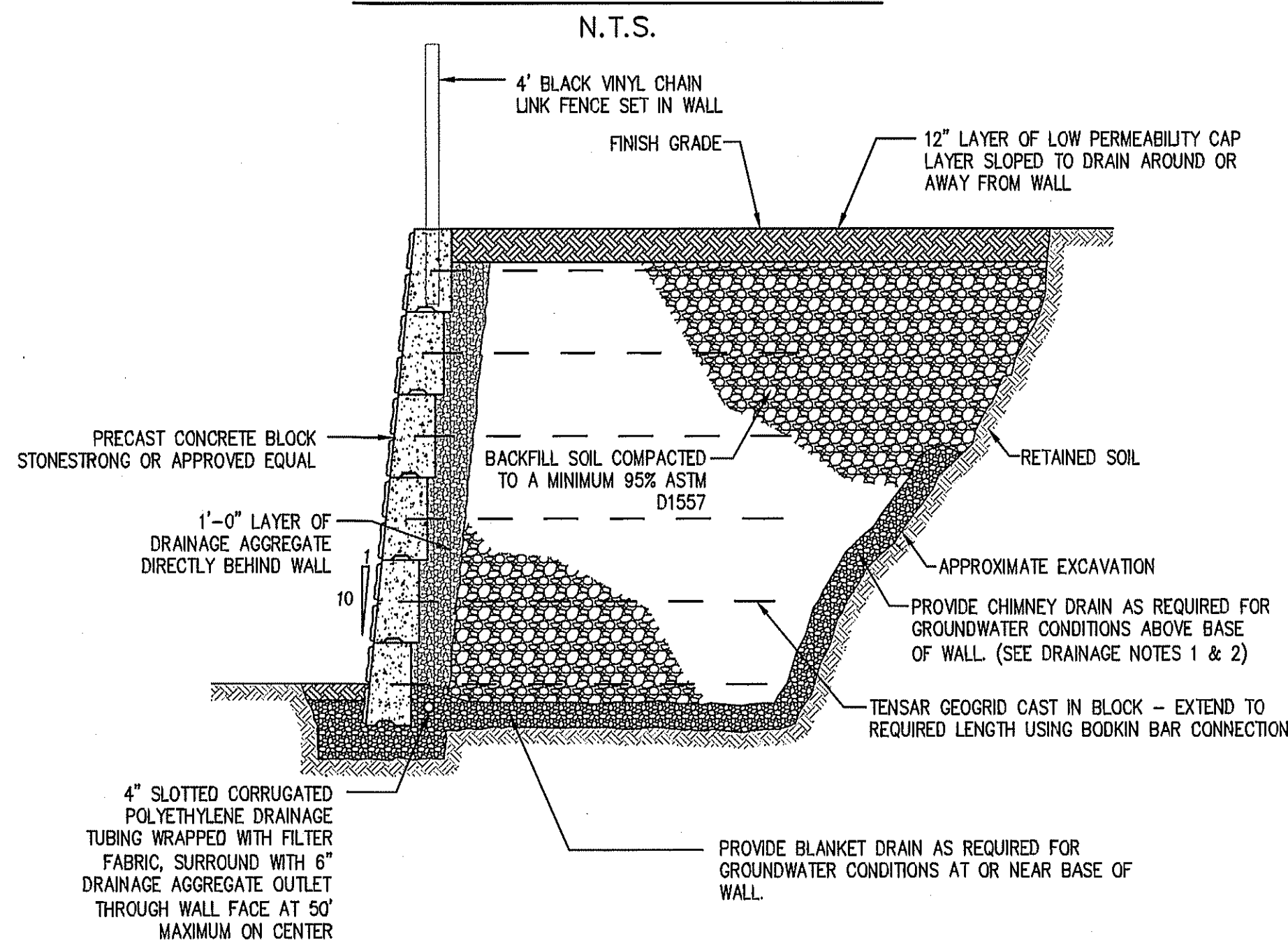


BITUMINOUS CONCRETE PAVEMENT DETAIL
N.T.S.

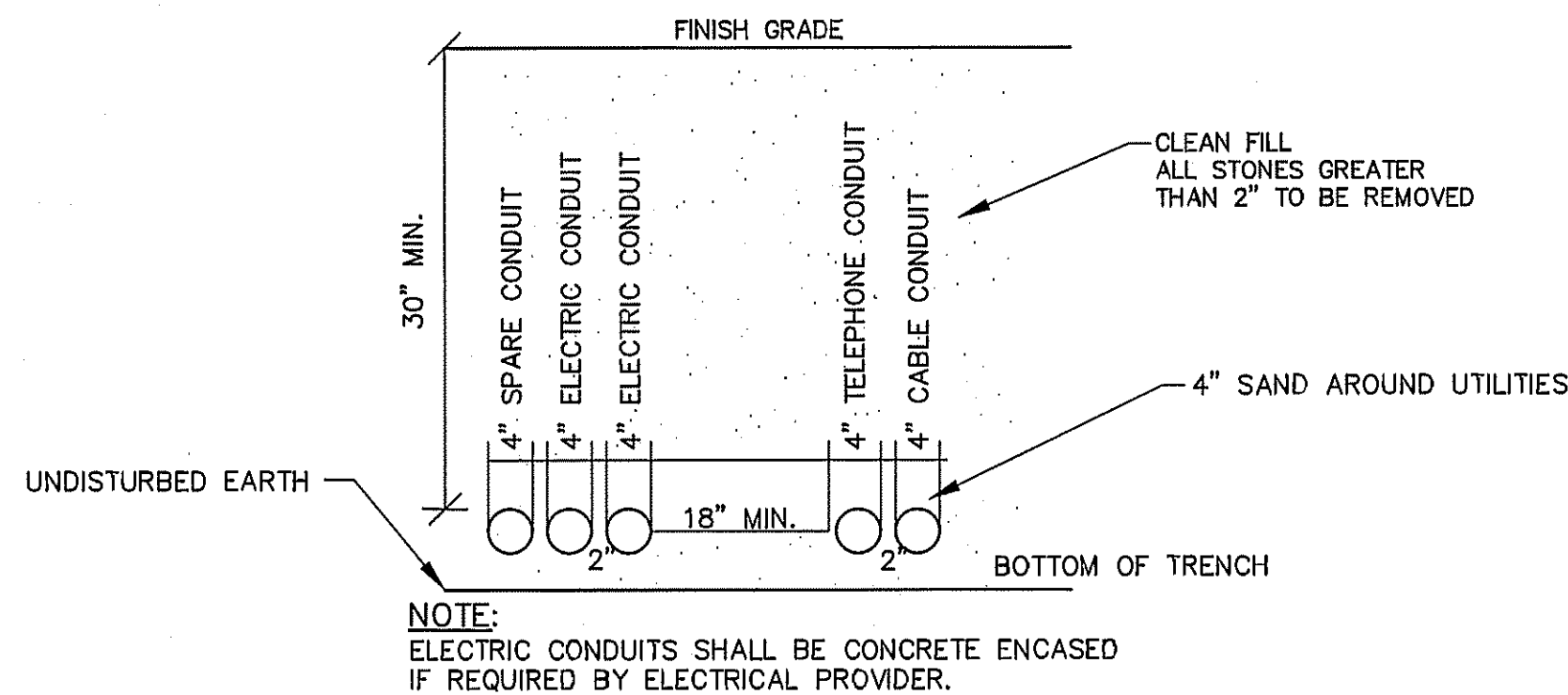


NOTE:
CONSTRUCTION JOINTS ARE TO BE AT 6' INTERVALS

CONCRETE SIDEWALK DETAIL
N.T.S.

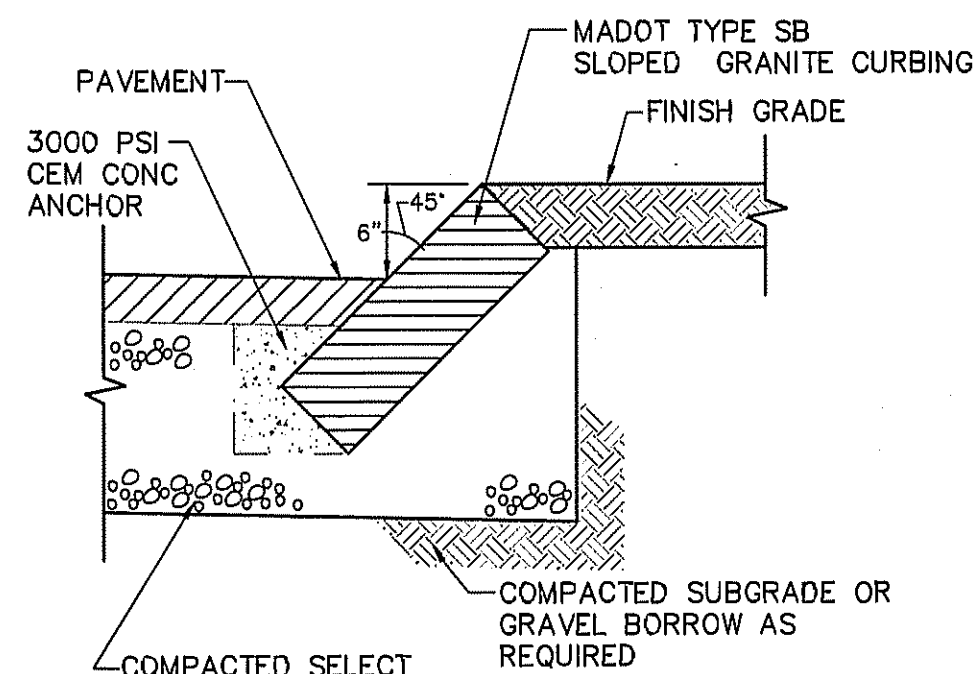


PRECAST CONCRETE RETAINING WALL DETAIL
N.T.S.

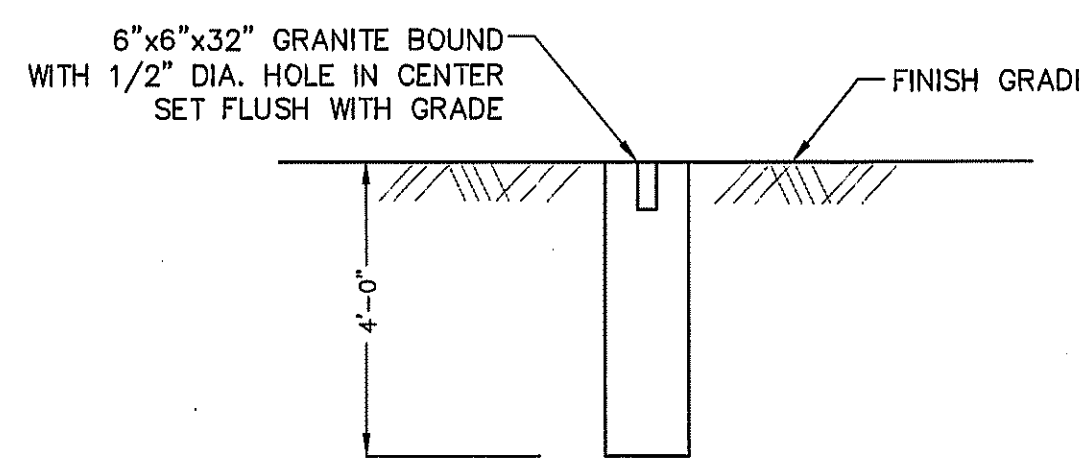


NOTE:
ELECTRIC CONDUITS SHALL BE CONCRETE ENCASED IF REQUIRED BY ELECTRICAL PROVIDER.

TYPICAL ELECTRIC UTILITY TRENCH DETAIL
N.T.S.

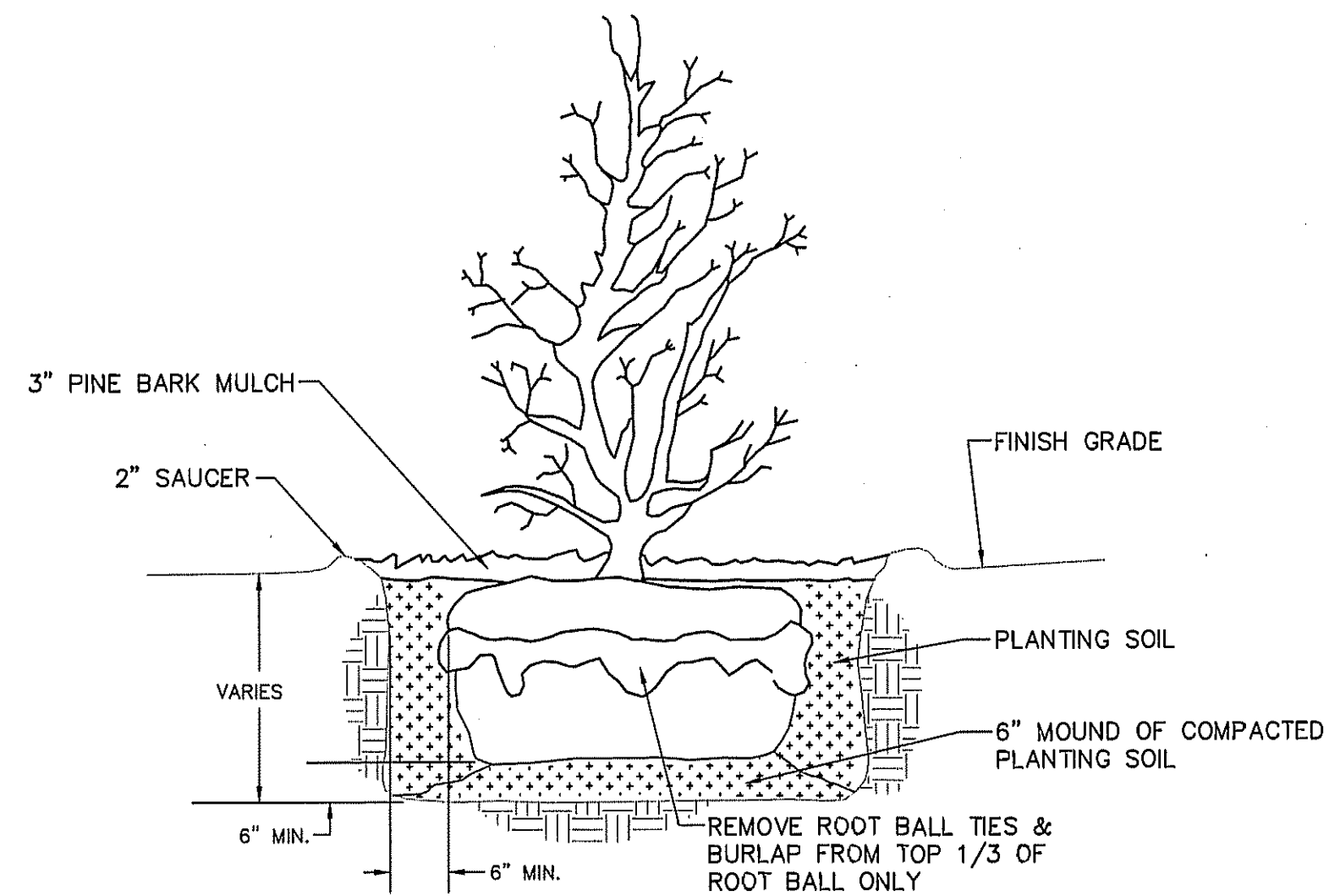


SLOPED GRANITE CURB DETAIL
N.T.S.

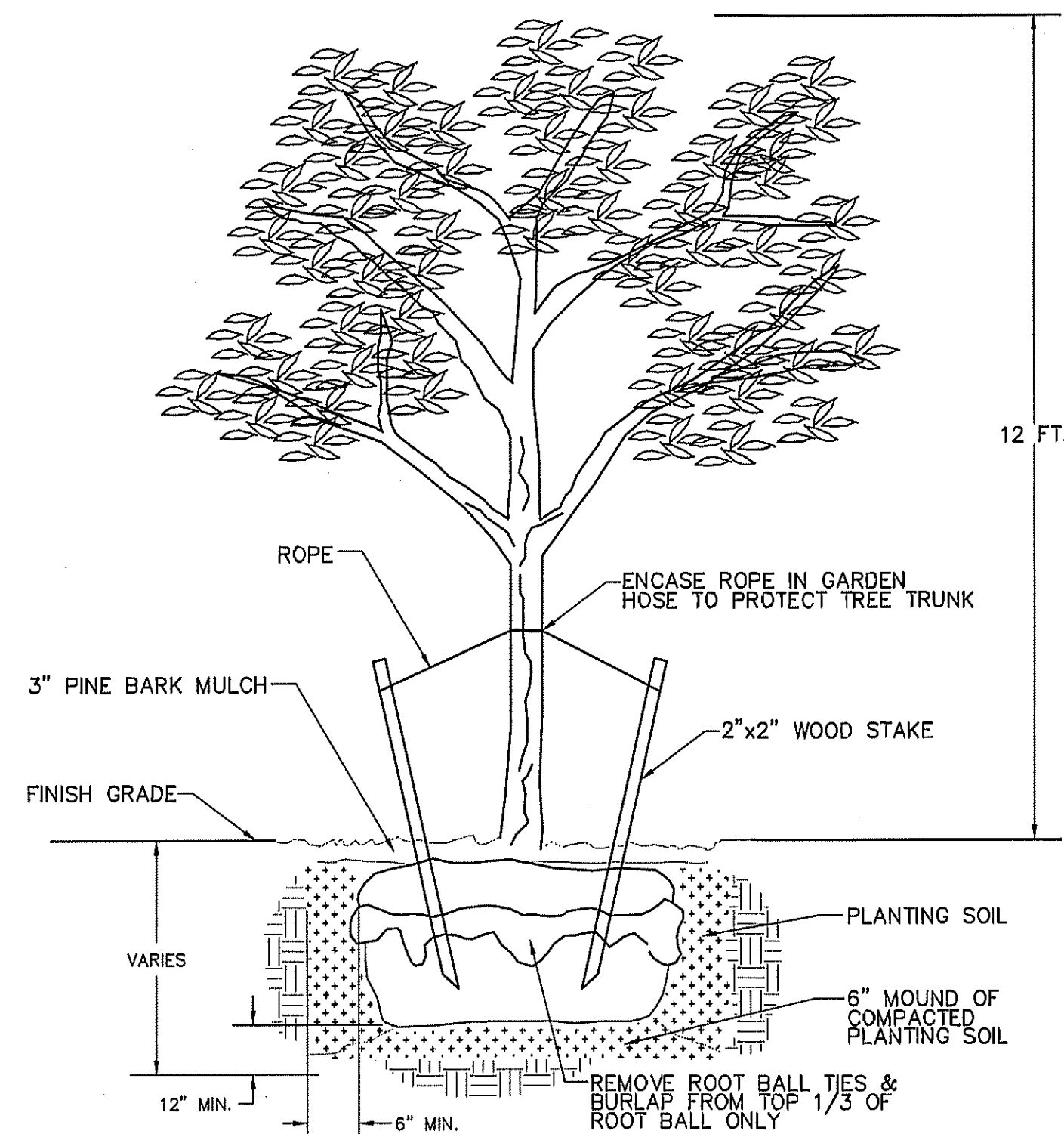


GRANITE BOUND DETAIL
N.T.S.

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TYPICAL SHRUB PLANTING DETAIL
N.T.S.



TYPICAL TREE PLANTING DETAIL
N.T.S.

APPROVED BY THE GRAFTON PLANNING BOARD

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SEE SHEET 28 FOR PLANNING BOARD CONDITIONS OF APPROVAL

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2 RACHEL ROAD
BOYLSTON, MA 01505

No.	Date	Revision
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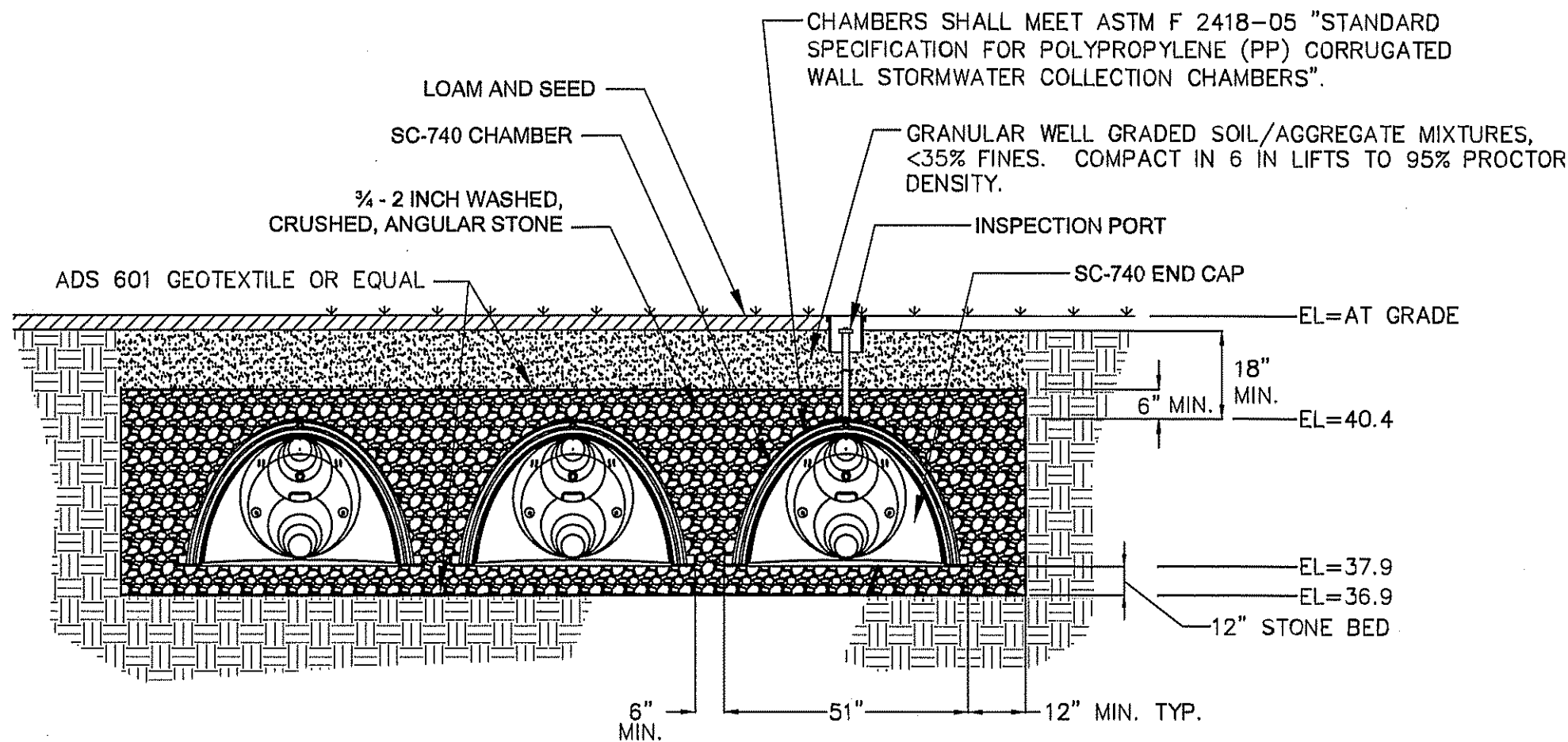
Drawn By: BRM
Designed By: BRM
Checked By: JSM

McCarthy Engineering, Inc.
Civil Engineers
42 Jungle Road, Leominster, MA 01453
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www.mccartydb.com

Project Name
Estates at Bull Meadow
Definitive Plan
N. Grafton, MA 01536

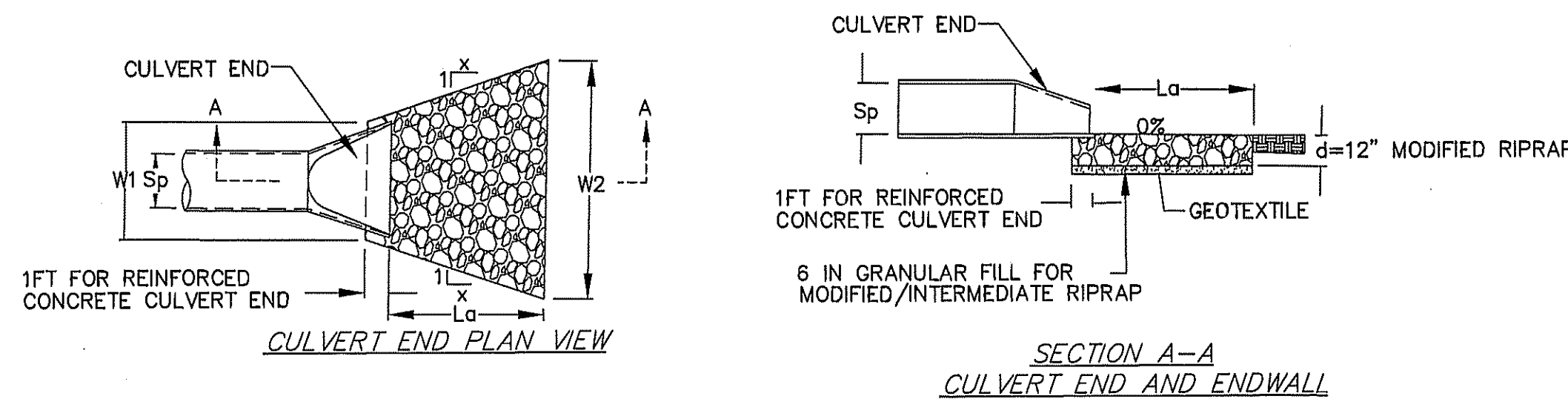
Sheet Title
Construction Details
(2 of 4)

Job No: 066
File Name: 066P-CDT02
Date: June 10, 2016
Scale: AS SHOWN
Sheet No: 24
OF 29



NOTES:
TYPE A = 8 CHAMBERS
TYPE B = 6 CHAMBERS

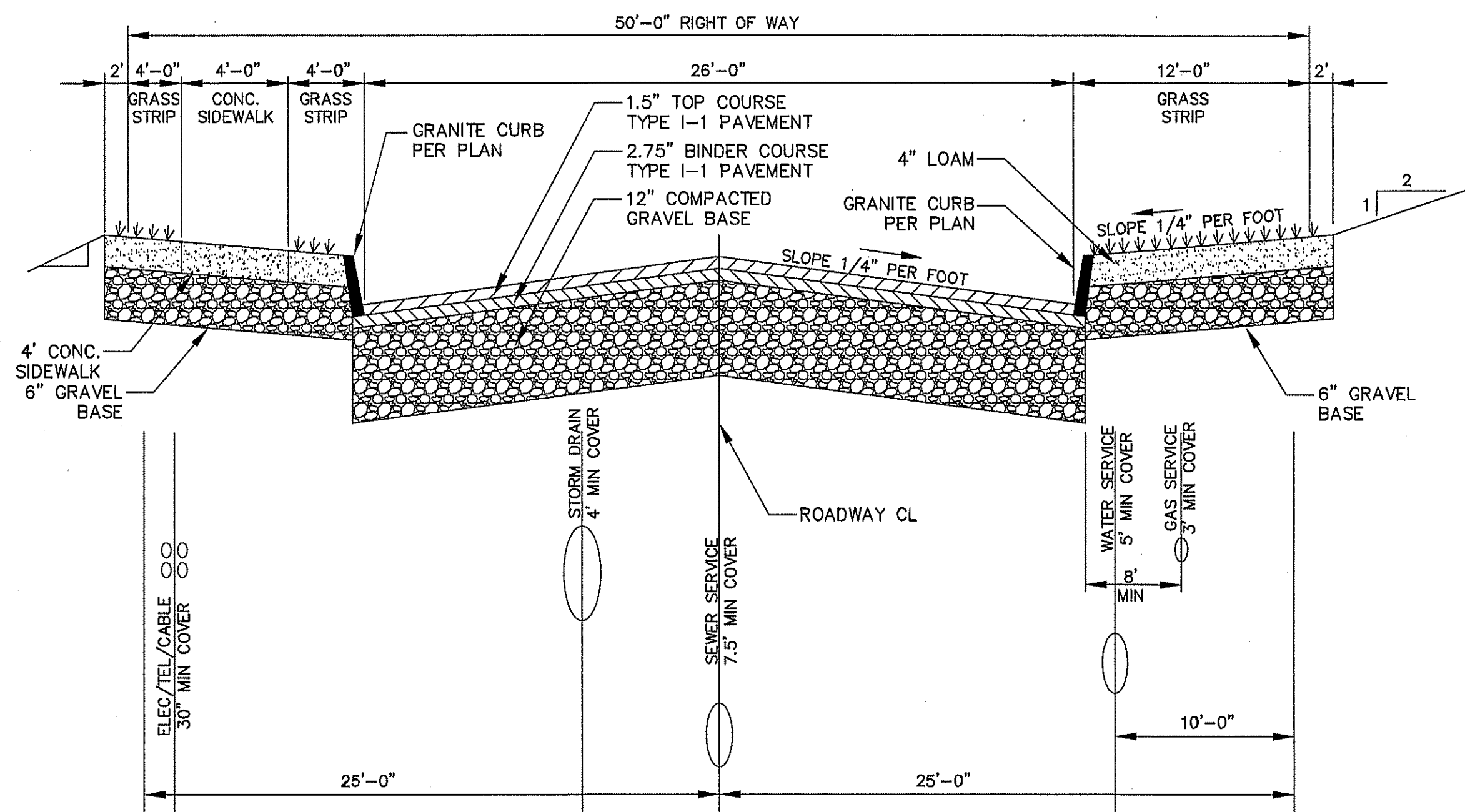
SC-740 DRY WELL
N.T.S.



APRON SIZING CRITERIA

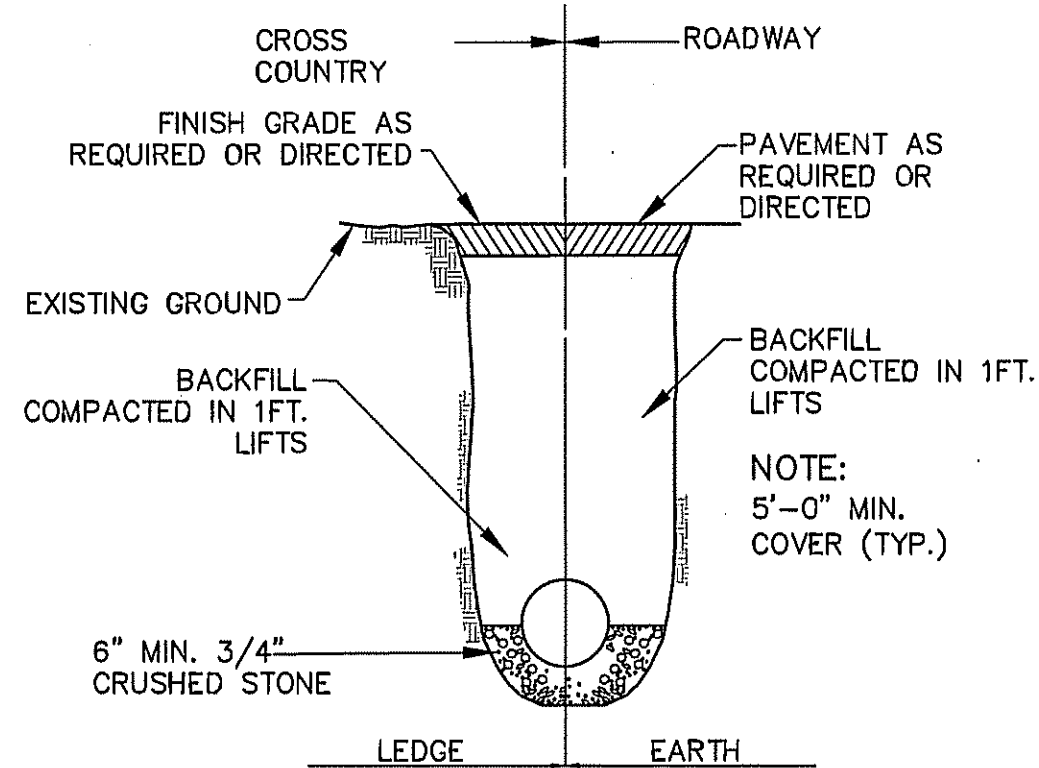
TYPE	A	W1	W2	Ld
FES 1	3	4.5	12.9	12.0
FES 2	3	3.0	12.9	10.0
FES 3	3	2.0	12.9	9.0
FES 4	3	4.5	12.9	15.7
FES 5	3	4.5	12.9	15.7

RAP OUTLET PROTECTION (TYPE A)
N.T.S.



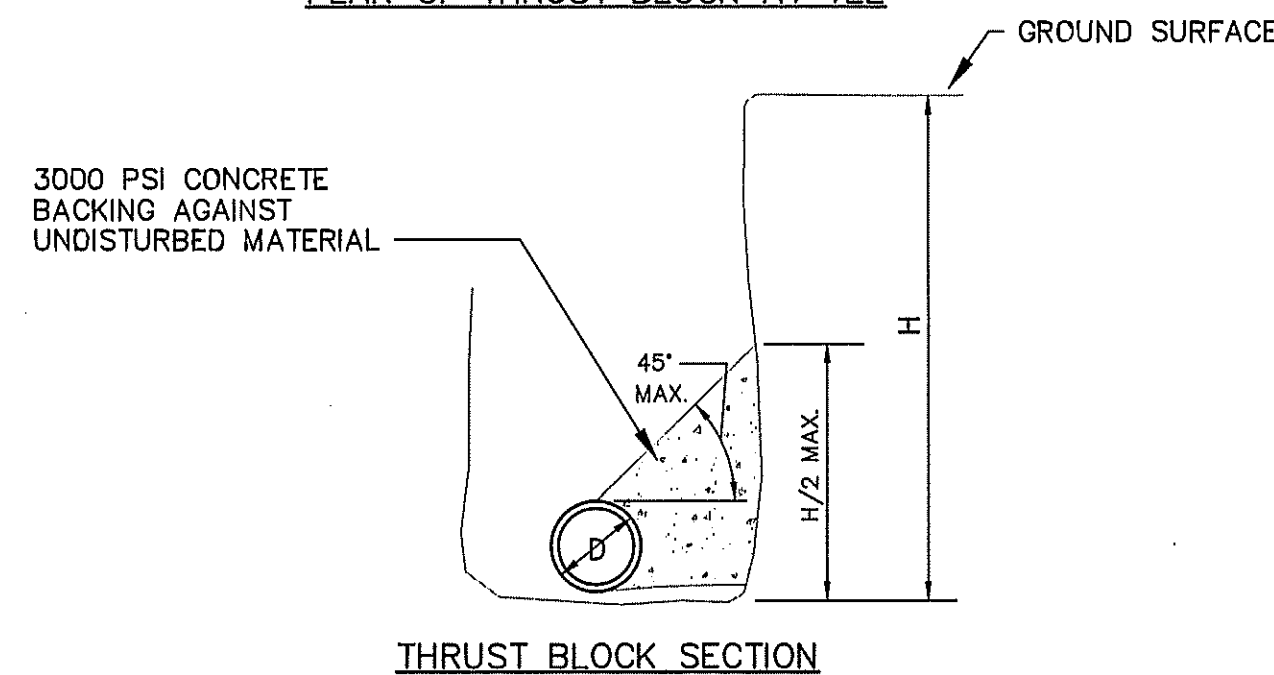
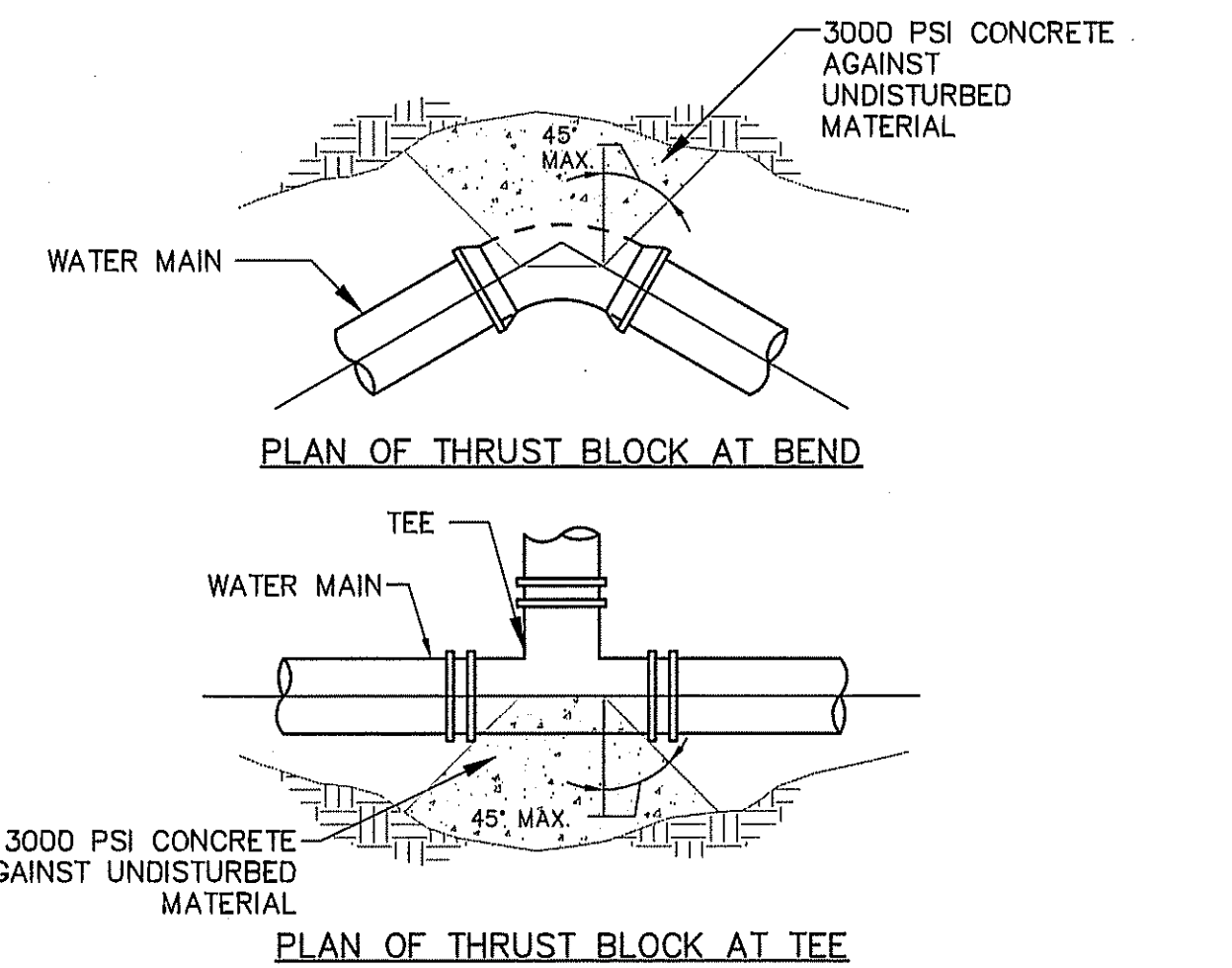
NOTES:
1. GAS SERVICE IS NOT INCORPORATED INTO THE DESIGN OF THIS SUBDIVISION.
2. SEWER SERVICE IS NOT INCORPORATED INTO THE DESIGN OF THIS SUBDIVISION. THE PROPOSED LOTS WILL BE SERVICED BY INDIVIDUAL SEPTIC SYSTEMS.

MINOR STREET B STANDARD CROSS-SECTION
N.T.S.

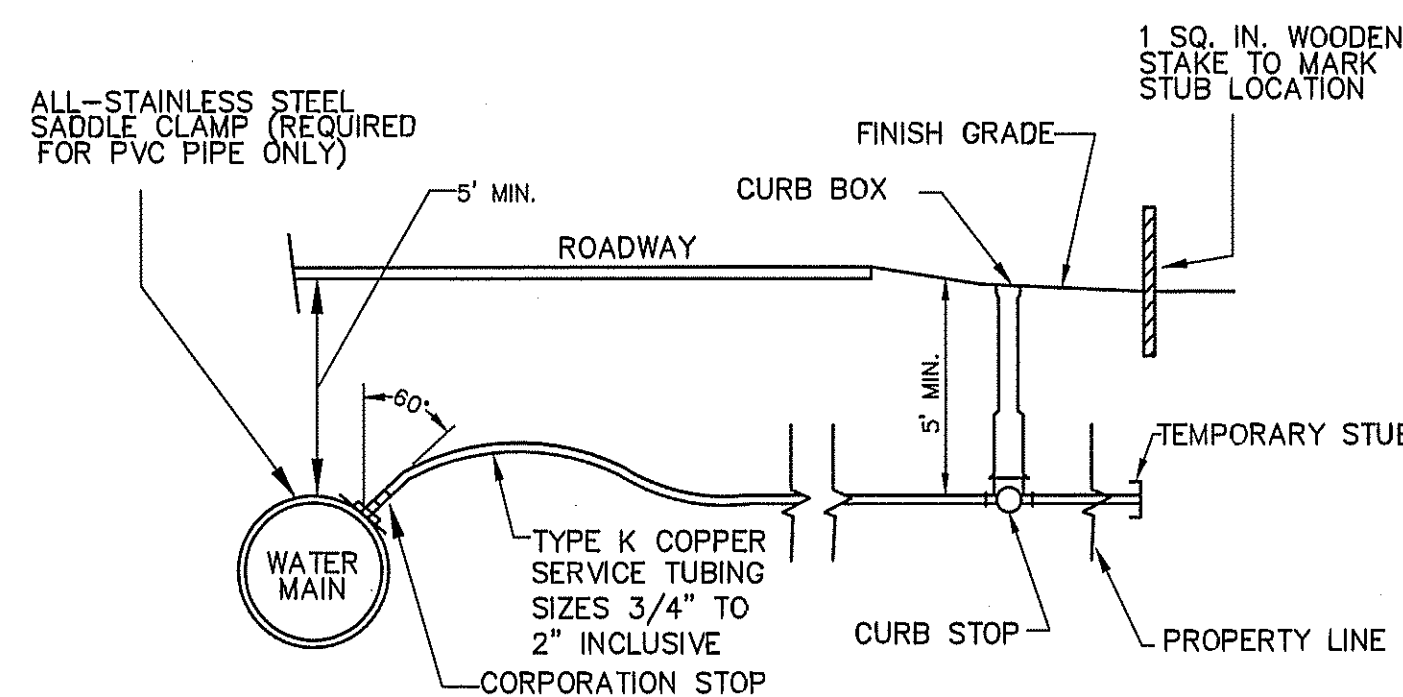


NOTE: BACKFILL MATERIAL SHALL CONSIST OF EXCAVATED MATERIAL AND/OR GRAVEL BORROW AS DIRECTED BY THE ENGINEER.

TYPICAL WATER MAIN TRENCH DETAIL
N.T.S.

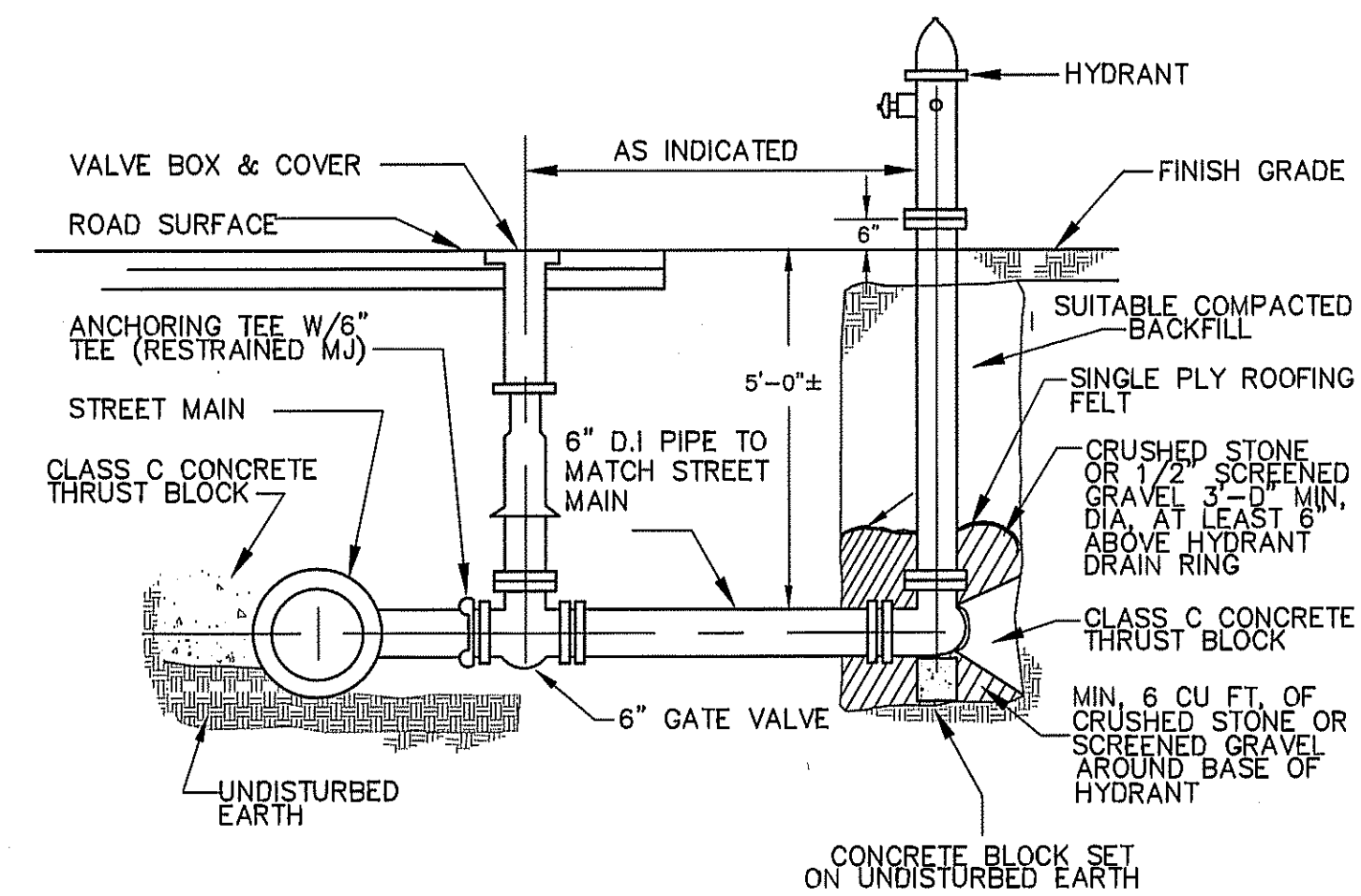


WATER MAIN THRUST BLOCK DETAIL
N.T.S.

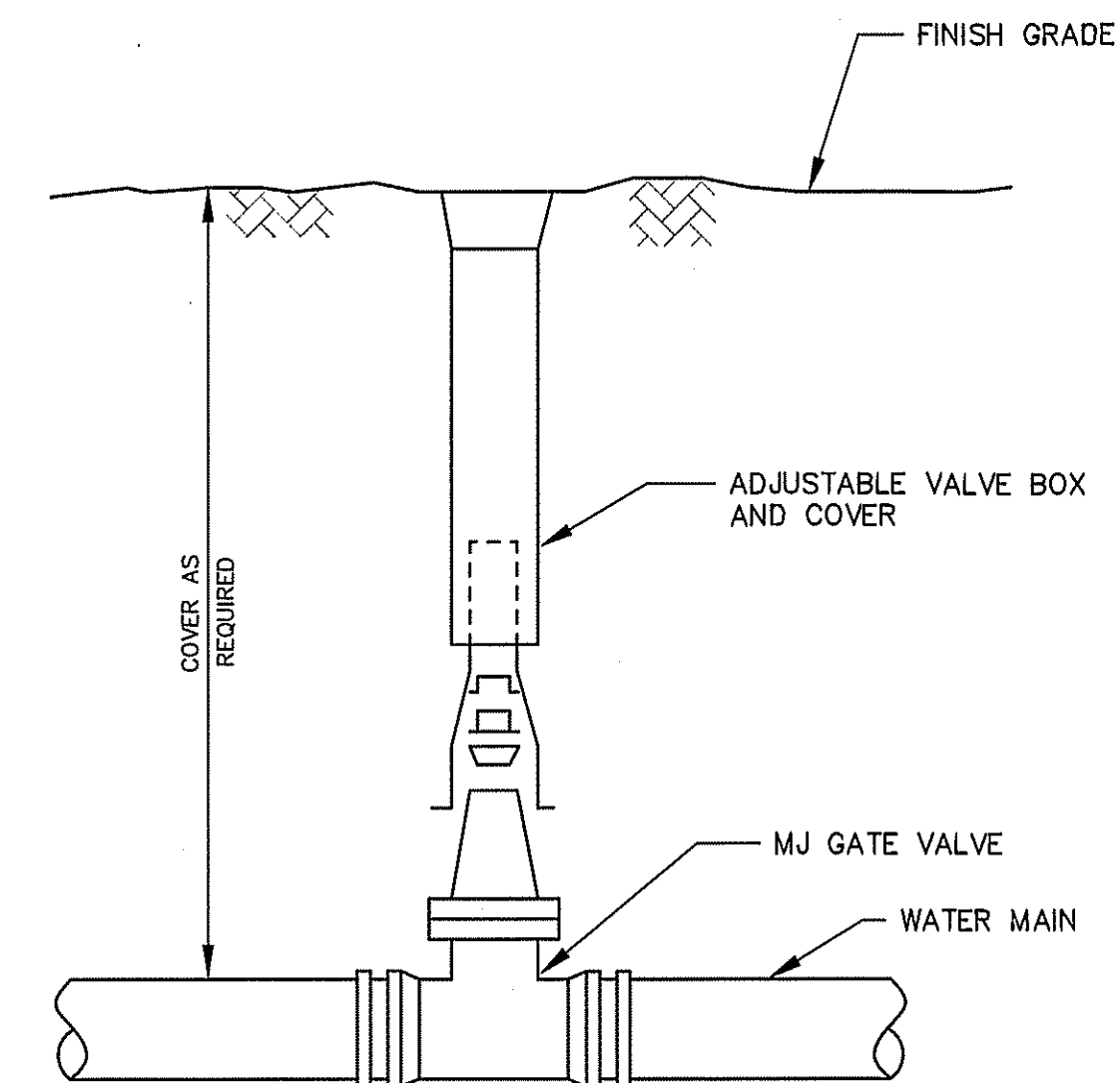


NOTE: TUBING, CORPORATION COCK & CURB STOP SHALL BE AS REQUIRED.

WATER SERVICE DETAIL
N.T.S.



HYDRANT CONNECTION DETAIL
N.T.S.



BURIED GATE VALVE DETAIL
N.T.S.

APPROVED BY THE GRAFTON PLANNING BOARD

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2 RACHEL ROAD
BOYLSTON, MA 01505

No.	Date	Revision
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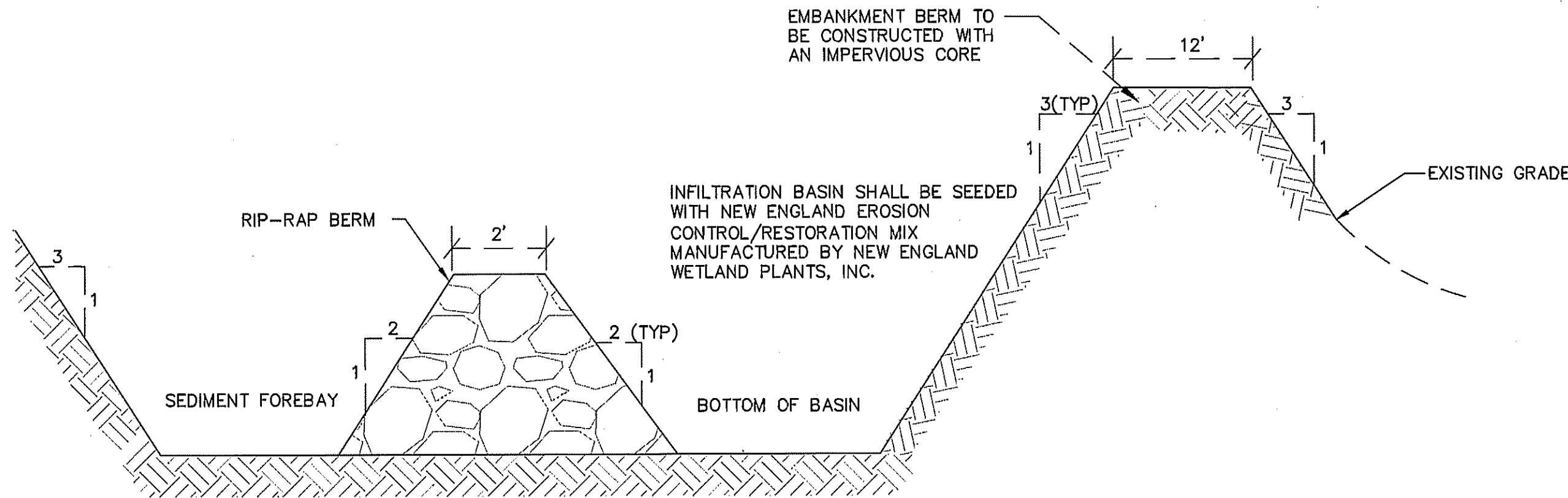
Drawn By: BRM
Designed By: BRM
Checked By: 757271

McCarty Engineering, Inc.
Civil Engineers
42 Jungle Road, Leominster, MA 01453
phone:(978) 534-1318 fax: (978) 840-6907
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Project Name
Estates at Bull Meadow
Definitive Plan
N. Grafton, MA 01536

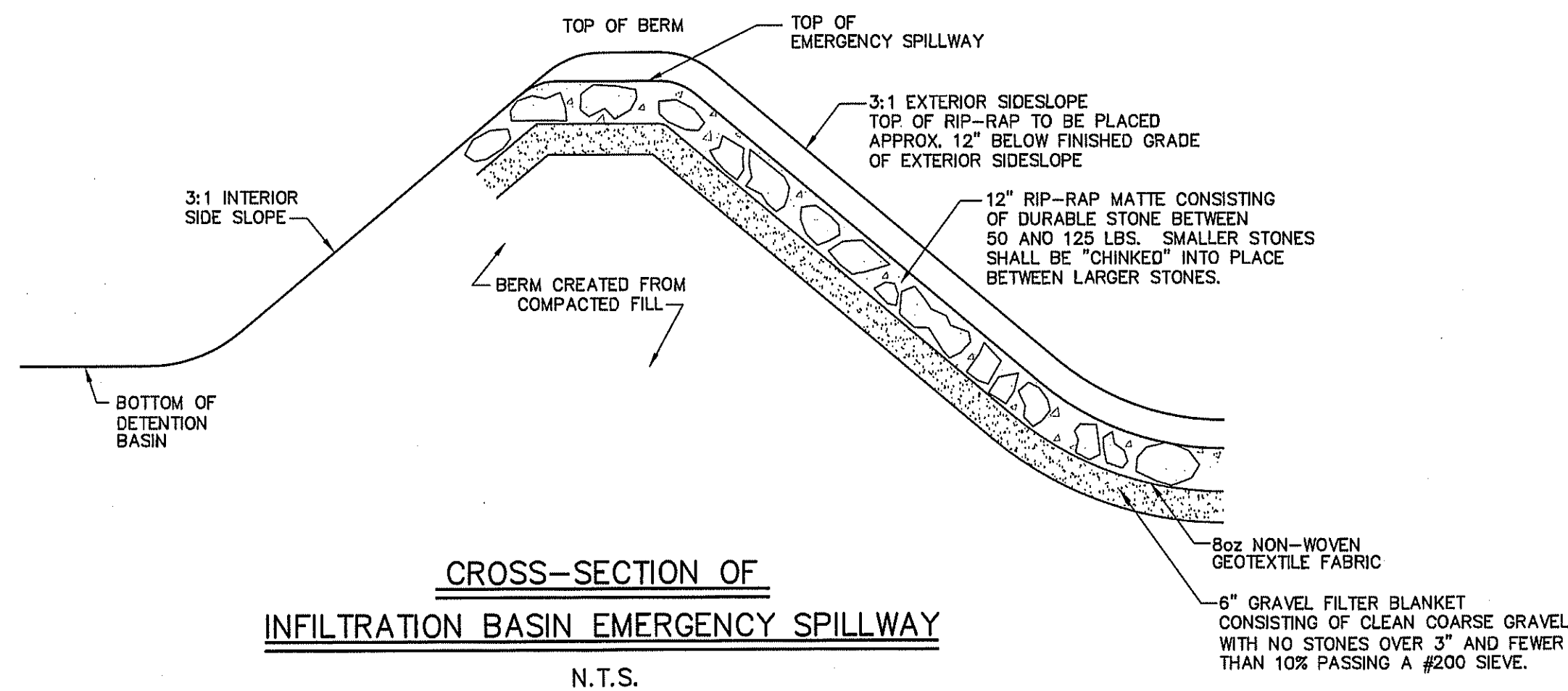
Sheet Title
Construction Details
(3 of 4)

Job No: 066
File Name: 066P-CDT03
Date: June 10, 2016
Scale: AS SHOWN
Sheet No.
25
OF 29

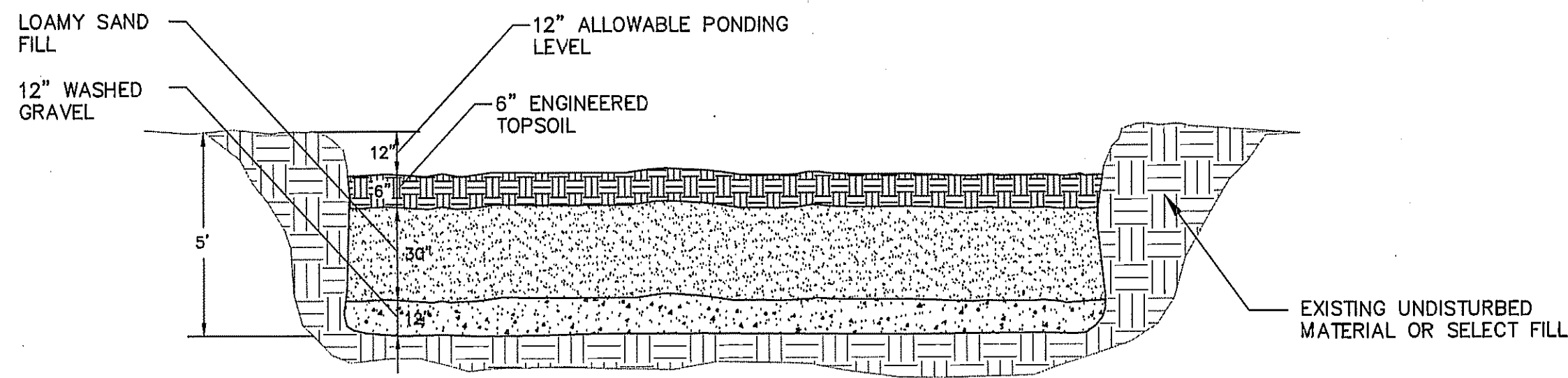


NOTE:
1. SEAL AROUND OUTLET PIPE WITH IMPERVIOUS BARRIER
2. A 6" PERFORATED UNDERDRAIN SHALL BE INSTALLED IN EACH INFILTRATION BASIN WITH A 6" VALVE THAT SHALL BE EASILY ACCESSIBLE AND SHALL REMAIN CLOSED DURING NORMAL OPERATION. THE UNDERDRAIN SHALL OUTLET IN THE RIP RAP MAT AS SHOWN ON THE GRADING AND DRAINAGE PLANS.

CROSS-SECTION OF TYPICAL INFILTRATION BASIN DETAIL
N.T.S.



CROSS-SECTION OF
INFILTRATION BASIN EMERGENCY SPILLWAY
N.T.S.



THE FOLLOWING SPECIES ARE RECOMMENDED FOR USE IN RAINGARDENS. MIXTURE OF PLANTINGS SHOULD BE CHOSEN TO MIMIC APPEARANCE OF ADJACENT WETLAND AREAS. THE NUMBER OF PLANTS REQUIRED VARIES WITH THE SIZE OF THE RAIN GARDEN BEING PROPOSED. ONCE THE GRADING OF THE RAINGARDEN IS COMPLETE AND THE FILL IS PLACED WITHIN IT, A LANDSCAPE ARCHITECT SHALL MAKE A SITE INSPECTION TO ADVISE THE CONTRACTOR ON THE NUMBER, SIZE, AND PLACEMENT OF THE PLANTINGS.

TREES:

ACER RUBRUM
BETULA NIGRA
LARIX LARCINA
LIQUIDAMBAR STYRACIFLUA
NYSSA SYLVAICA
SAMBUCUS CANADENSIS

RED MAPLE
RIVER BIRCH
EASTERN LARCH
SWEETGUM
BLACK GUM
AMERICAN ELDERBERRY

SHRUBS/GROUND COVER:

AMELANCHIER CANADENSIS
ARONIA ARBUTIFOLA
CORNUS SERICEA
HAMAMELUS VIRGINIANA
LLEX GLABRA
LLEX VERTICILLATA
KALMIA LATIFOLIA
VACCINIUM CORYMBOSUM
VIBURNUM DENTATUM

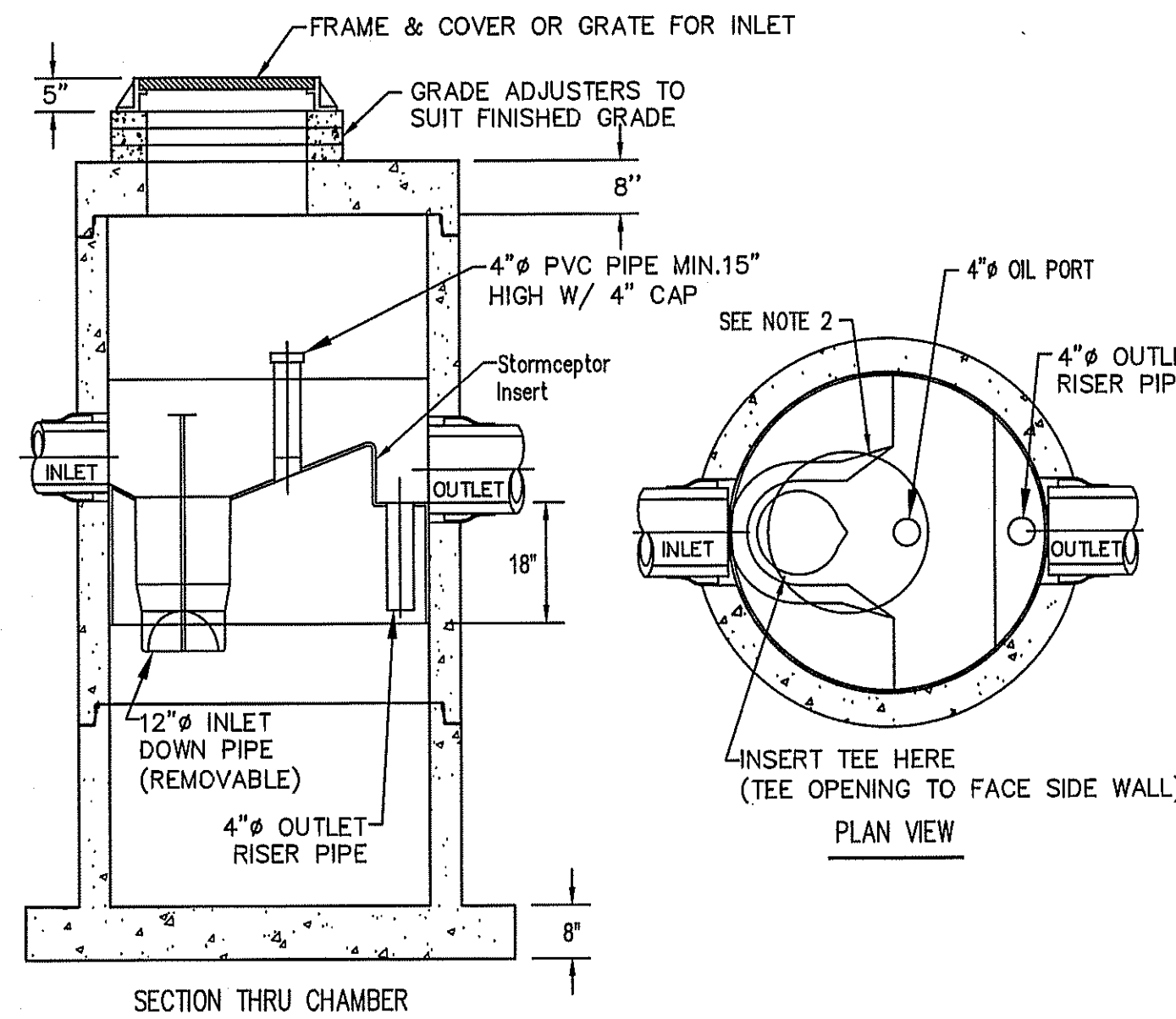
SHADBLOW SERVICEBERRY
RED CHOKEBERRY
RED TWIG DOGWOOD
WITCH HAZEL
INKBERRY
WINTERBERRY
MOUNTAIN LAUREL
Highbush BLUEBERRY
ARROWWOOD

HERBACEOUS:

NEW ENGLAND WETLAND PLANTS -
ACORUS CALAMUS
CAREX PENDULA
EUPATORIUM MACULATUM
IRIS SIBERICA
IRIS VERSICOLOR
LOBELIA CARDINALIS
OSMUNDA REGALIS
OSMUNDA CINNAMOMEA

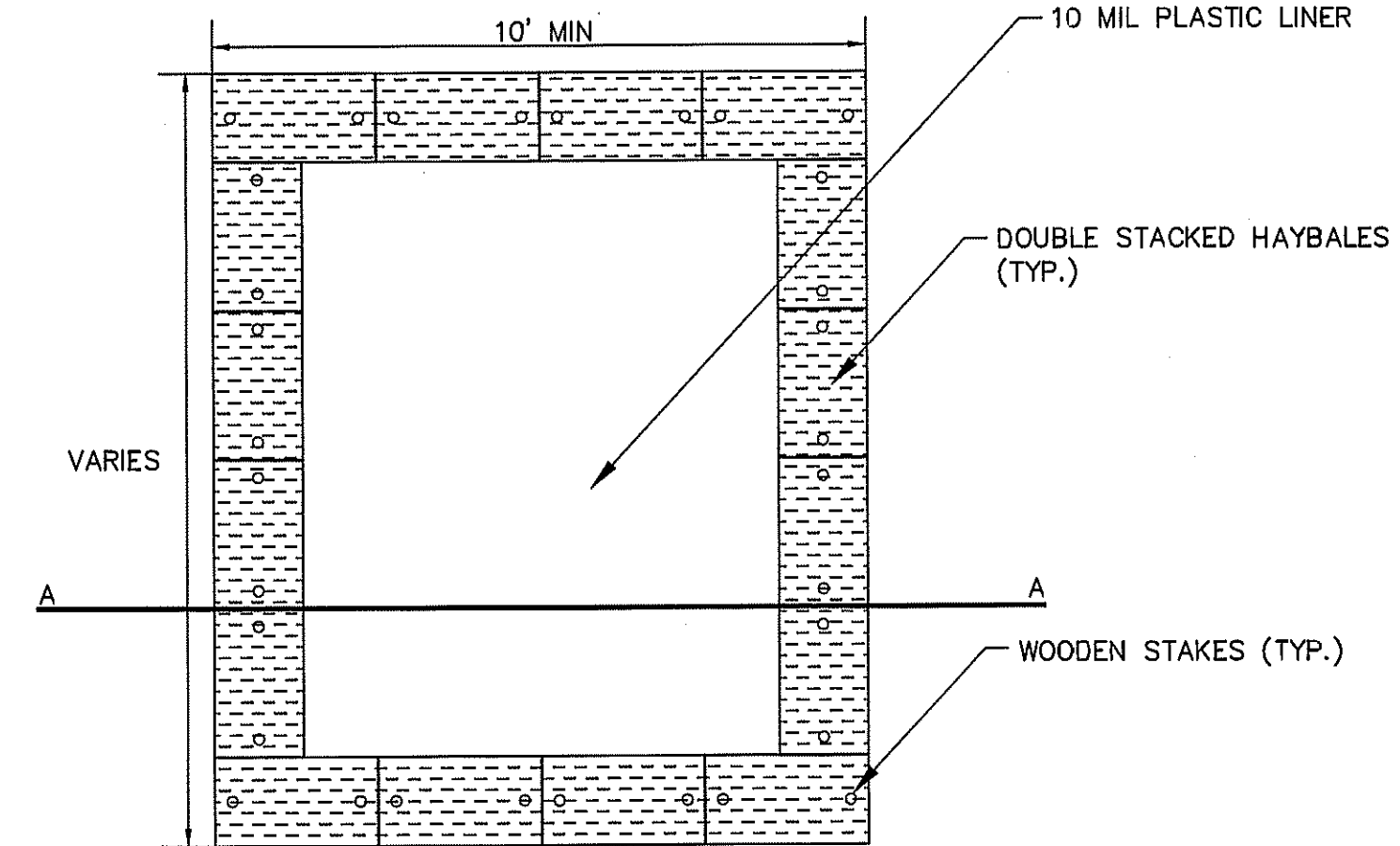
WETLAND SEED MIX
SWEET FLAG
DROOPING SEDGE
JOE PYE WEED
SIBERIAN IRIS
BLUE FLAG IRIS
CARDINAL FLOWER
ROYAL FERN
CINNAMON FERN

RAINGARDEN DETAIL
N.T.S.

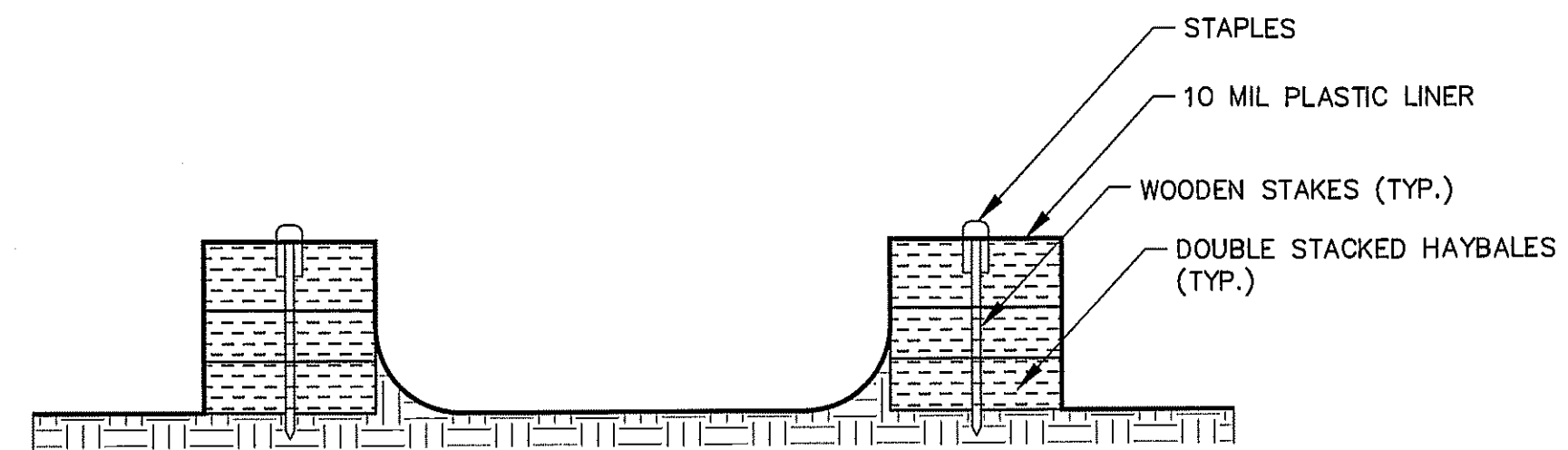


NOTES:
1. THE USE OF FLEXIBLE CONNECTION IS RECOMMENDED AT THE INLET AND OUTLET WHERE APPLICABLE.
2. THE COVER SHOULD BE POSITIONED OVER THE INLET DROP PIPE AND THE OIL PORT.
3. THE STORMCEPTOR SYSTEM IS PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: #4985148, #5498331, #5725760, #5753115, #5849181, #6068765, #6371690.
4. CONTACT A CONCRETE PIPE DIVISION REPRESENTATIVE FOR FURTHER DETAILS NOT LISTED ON THIS DRAWING.

STC 450 WATER QUALITY UNIT
N.T.S.



PLAN



SECTION A-A

NOTES:
1. THE CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
2. THE CONCRETE WASHOUT AREA WILL BE CONSTRUCTED ABOVE GRADE OR BELOW GRADE AT THE OPTION OF THE CONTRACTOR. THE ACTUAL LAYOUT SHALL BE DETERMINED IN THE FIELD.
3. THE CONCRETE WASHOUT AREA SHALL BE CONSTRUCTED AND MAINTAINED IN SUFFICIENT SIZE TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS. THE WASHOUT AREA MUST BE CLEAN OR A NEW WASHOUT AREA MUST BE CONSTRUCTED AND READY FOR USE ONCE THE WASHOUT IS 75% FULL.
4. THE CONCRETE WASHOUT AREA SHALL BE LOCATED IN THE CONSTRUCTION LAYDOWN AREA.
5. PLASTIC LINING MATERIAL SHALL BE A MINIMUM OF 10 MIL POLYETHYLENE SHEETING AND SHALL BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.
6. WHEN THE CONCRETE WASHOUT AREA IS NO LONGER REQUIRED FOR WORK, THE HARDENED CONCRETE AND MATERIAL USED TO CONSTRUCT WASHOUT AREA SHALL BE REMOVED AND DISPOSED OF AT AN APPROVED WASTE SITE.
7. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, THE DISTURBED AREA SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE ENGINEER.

CONCRETE WASHOUT AREA
N.T.S.

APPROVED BY THE GRAFTON
PLANNING BOARD

DATE:

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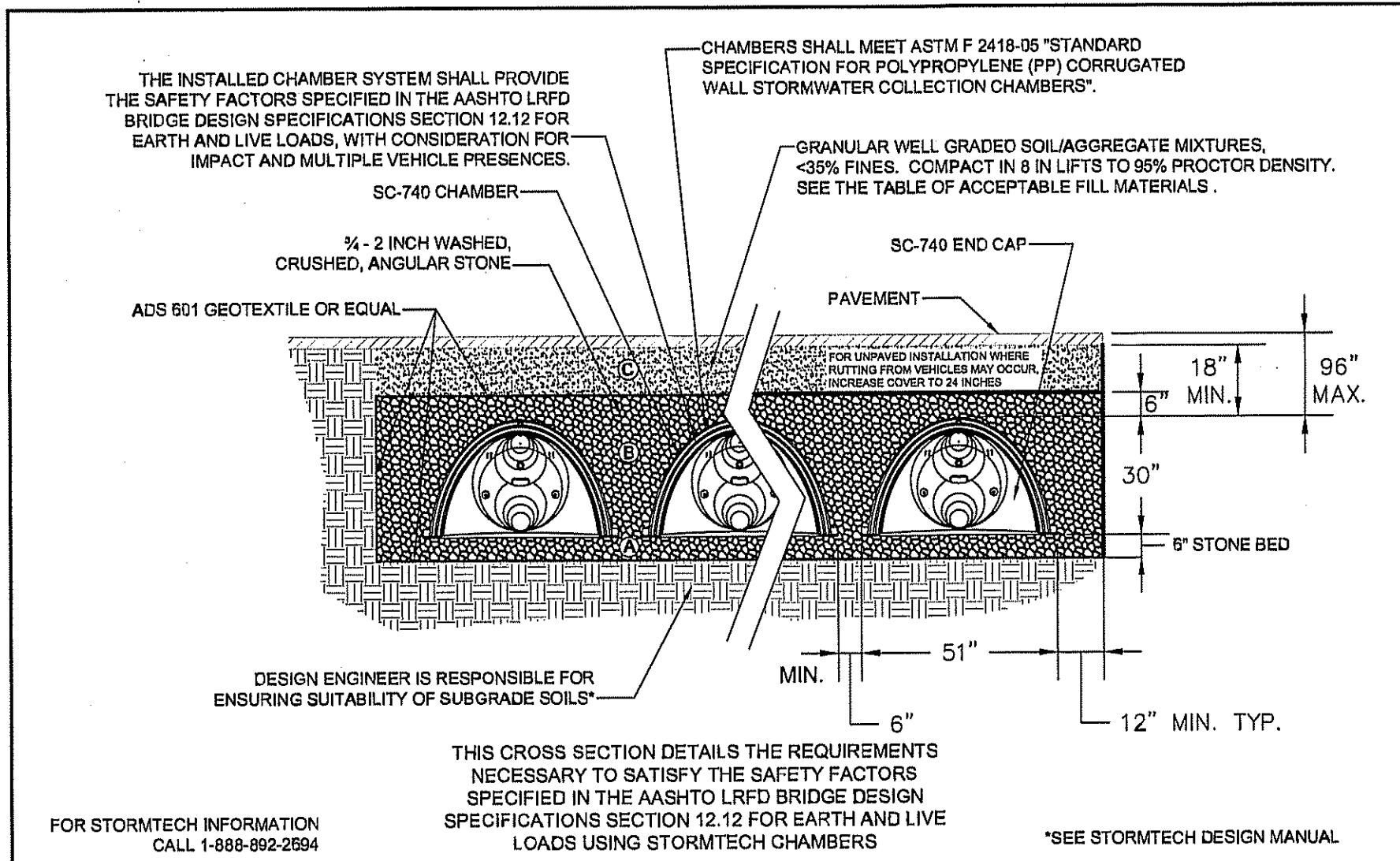
Drawn By: BRM
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Checked By: *BRM*

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Definitive Plan
N. Grafton, MA 01536

Sheet Title
Construction Details
(4 of 4)

Job No: 066
File Name: 066P-CDT04
Date: June 10, 2016
Scale: AS SHOWN
Sheet No. 26
OF 29



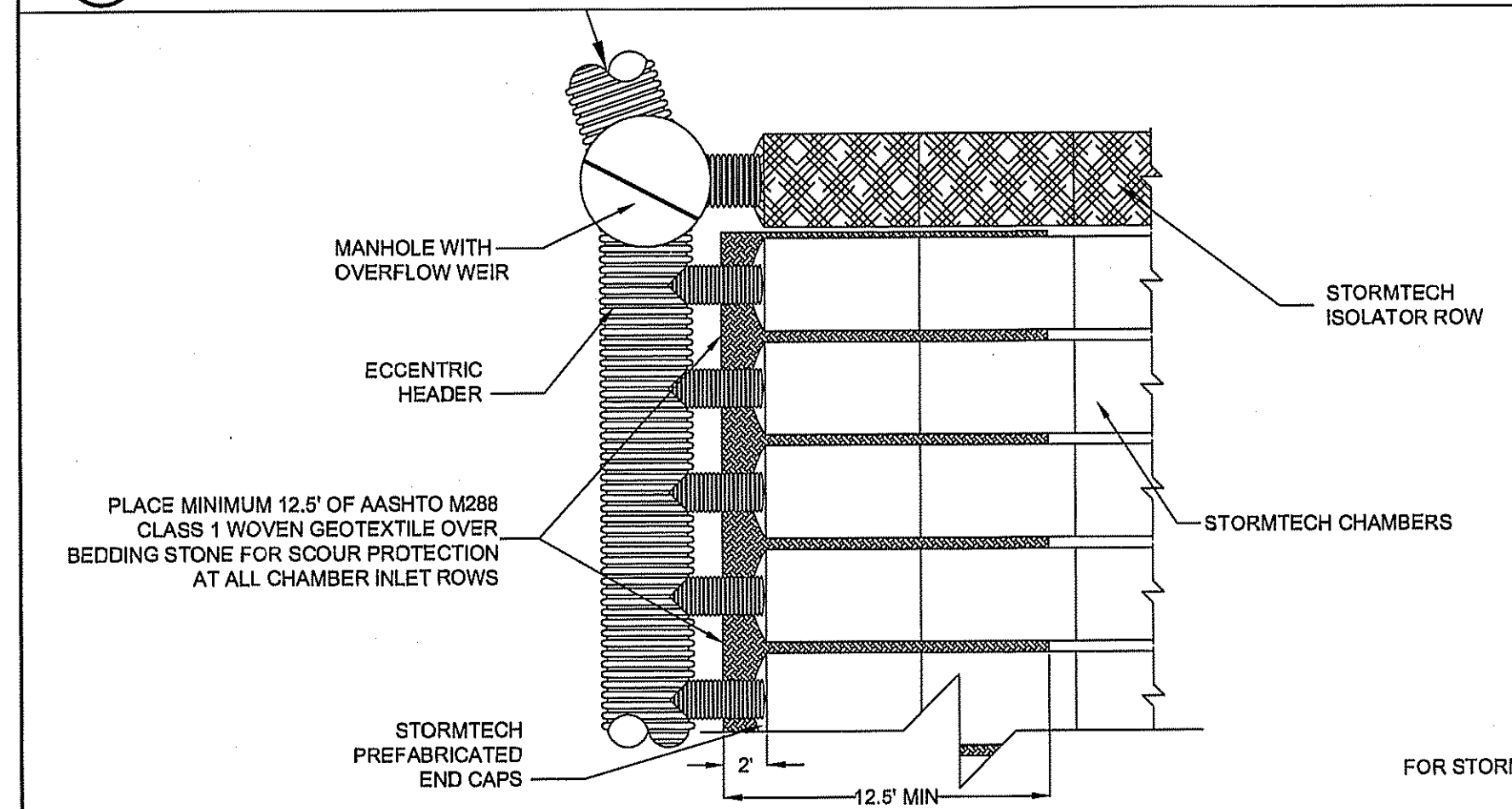
SC-740 TYPICAL CROSS SECTION

ACCEPTABLE FILL MATERIALS
STORMTECH SC-740 CHAMBER SYSTEMS

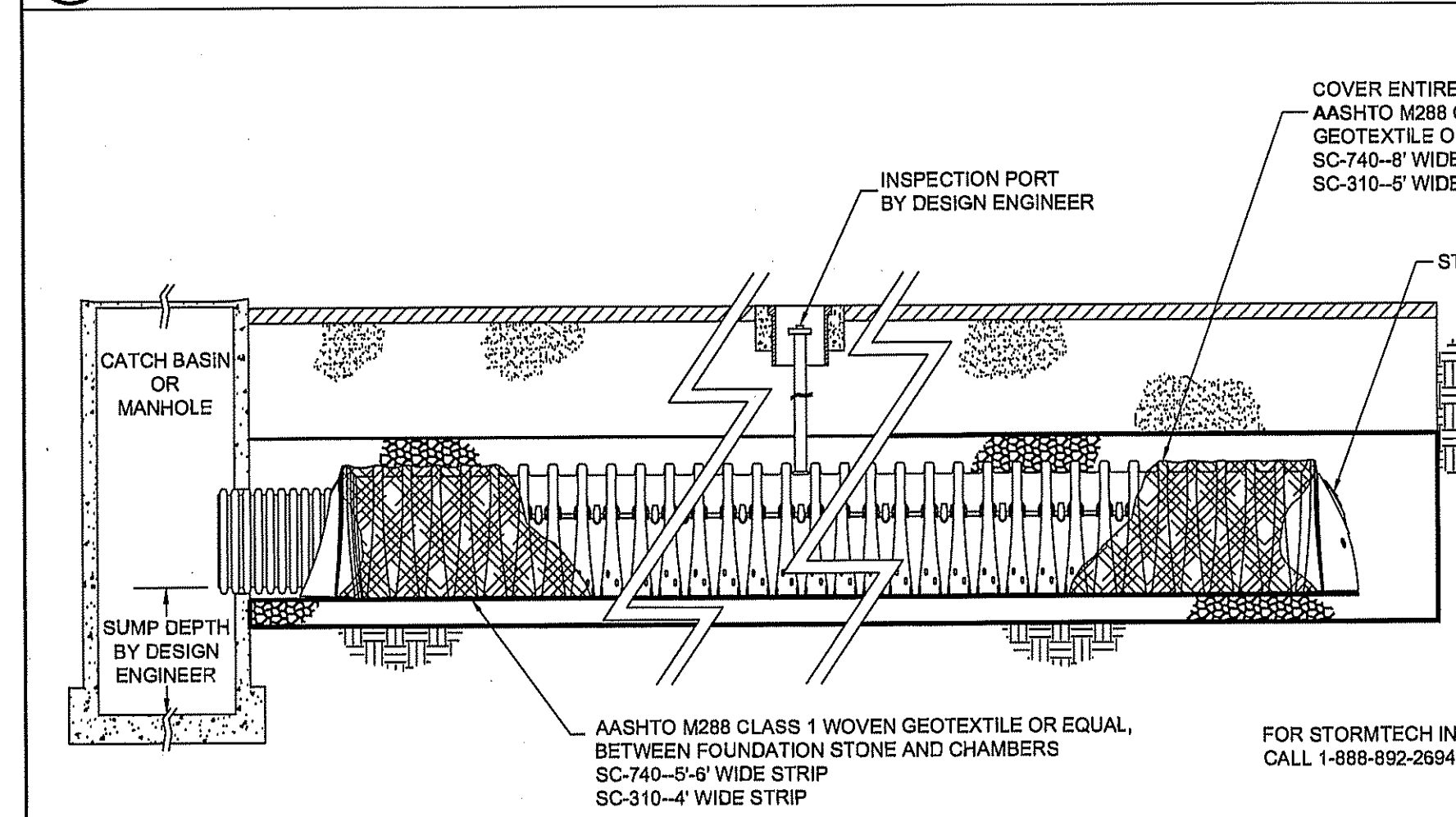
MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION	AASHTO M145 DESIGNATION	COMPACTION/DENSITY REQUIREMENT
FILL MATERIAL FROM 18" TO GRADE ABOVE CHAMBERS	ANY SOIL/ROCK MATERIALS, NATIVE SOILS OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	N/A	PREPARE PER ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
FILL MATERIAL FOR 6" TO 18" ELEVATION ABOVE CHAMBERS (24" FOR UNPAVED INSTALLATIONS)	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES.	3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 88, 9, 10	A-1 A-2 A-3	COMPACT IN 6" LIFTS TO A MINIMUM 95% STANDARD PROCTOR DENSITY. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 LBS. DYNAMIC FORCE NOT TO EXCEED 20,000 LBS.
EMBEDMENT STONE SURROUNDING AND TO A 6" ELEVATION ABOVE CHAMBERS	WASHED ANGULAR STONE WITH THE MAJORITY OF PARTICLES BETWEEN 3/4 - 2 INCH	3, 357, 4, 467, 5, 56, 57	N/A	NO COMPACTION REQUIRED
FOUNDATION STONE BELOW CHAMBERS	WASHED ANGULAR STONE WITH THE MAJORITY OF PARTICLES BETWEEN 3/4 - 2 INCH	3, 357, 4, 467, 5, 56, 57	N/A	PLATE COMPACT OR ROLL TO ACHIEVE A 95% STANDARD PROCTOR DENSITY

PLEASE NOTE: THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE WASHED CRUSHED ANGULAR. FOR EXAMPLE, THE STONE MUST BE SPECIFIED AS WASHED, CRUSHED, ANGULAR NO. 4 STONE.

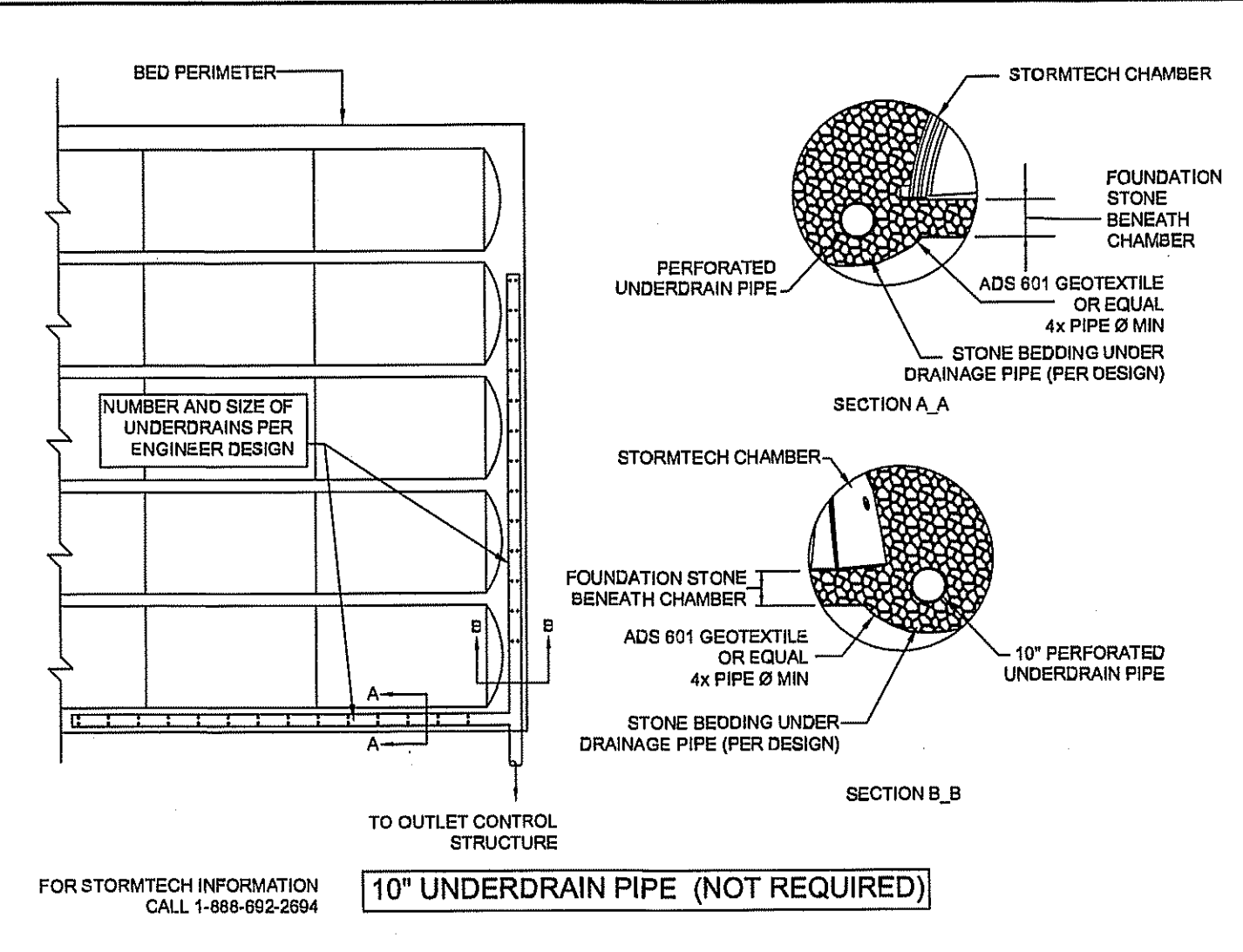
STORMTECH ACCEPTABLE FILL MATERIALS



STORMTECH ISOLATOR™ ROW MANIFOLD DETAIL

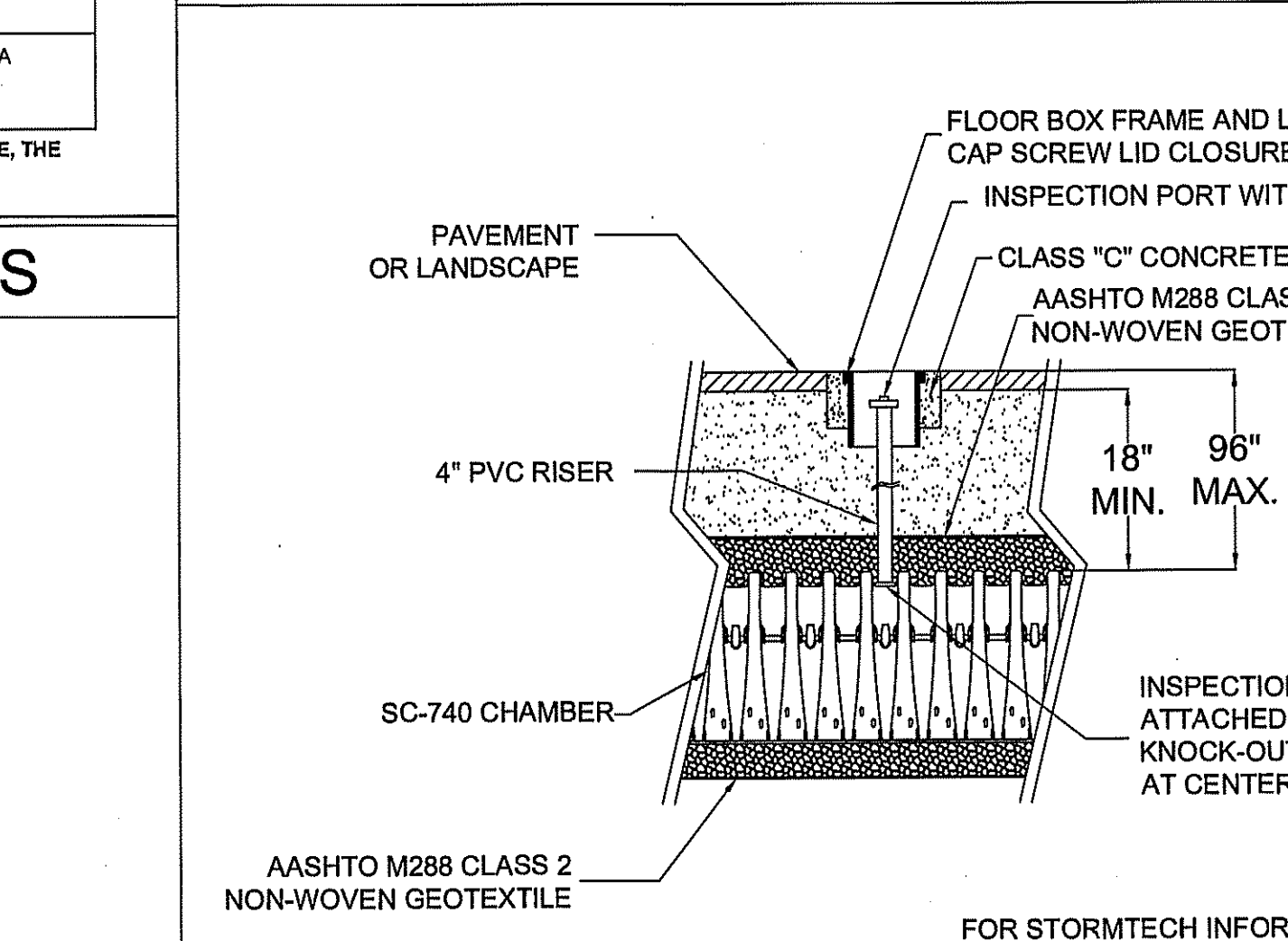


STORMTECH ISOLATOR™ ROW DETAIL

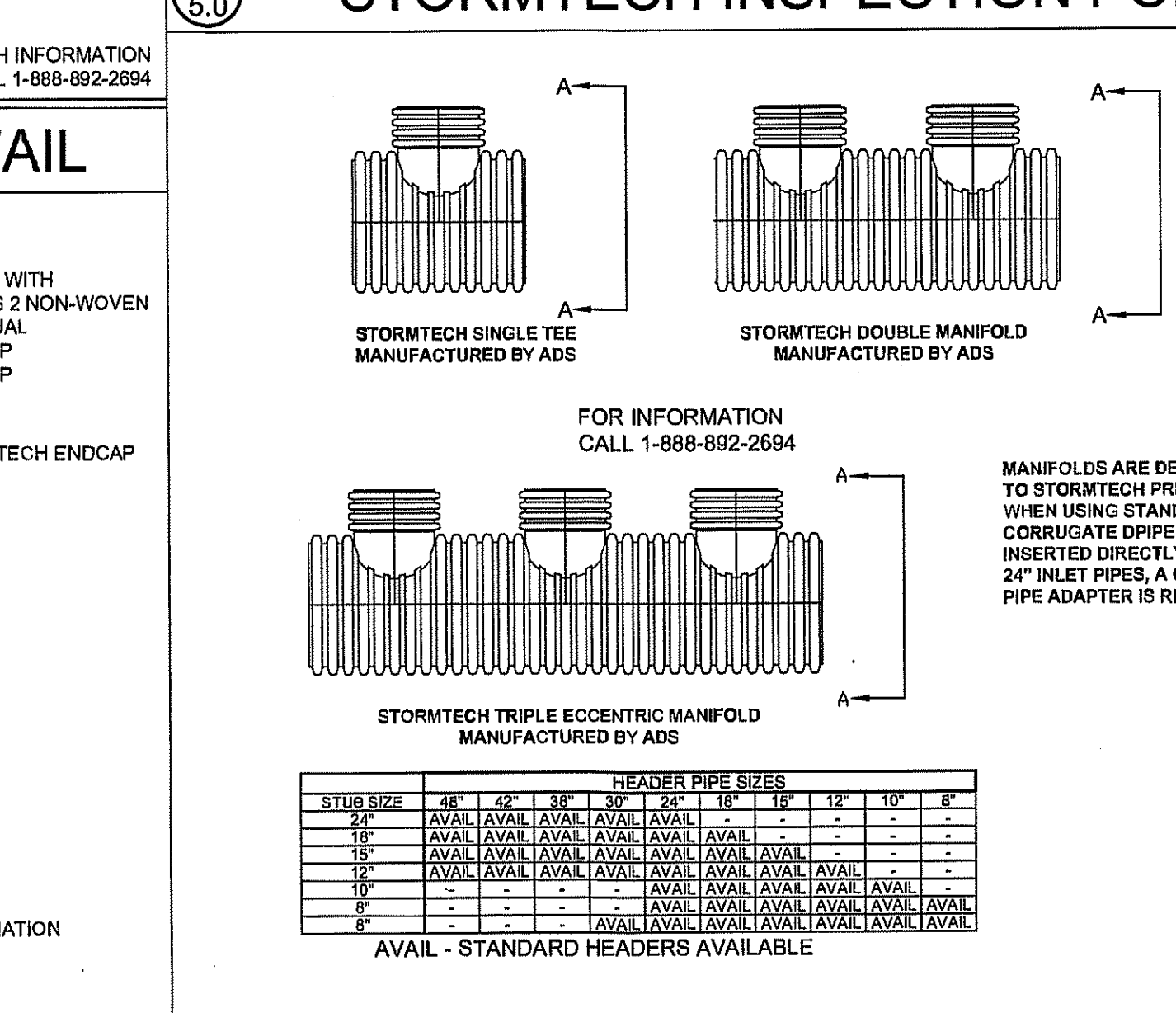


STORMTECH UNDERDRAIN DETAIL

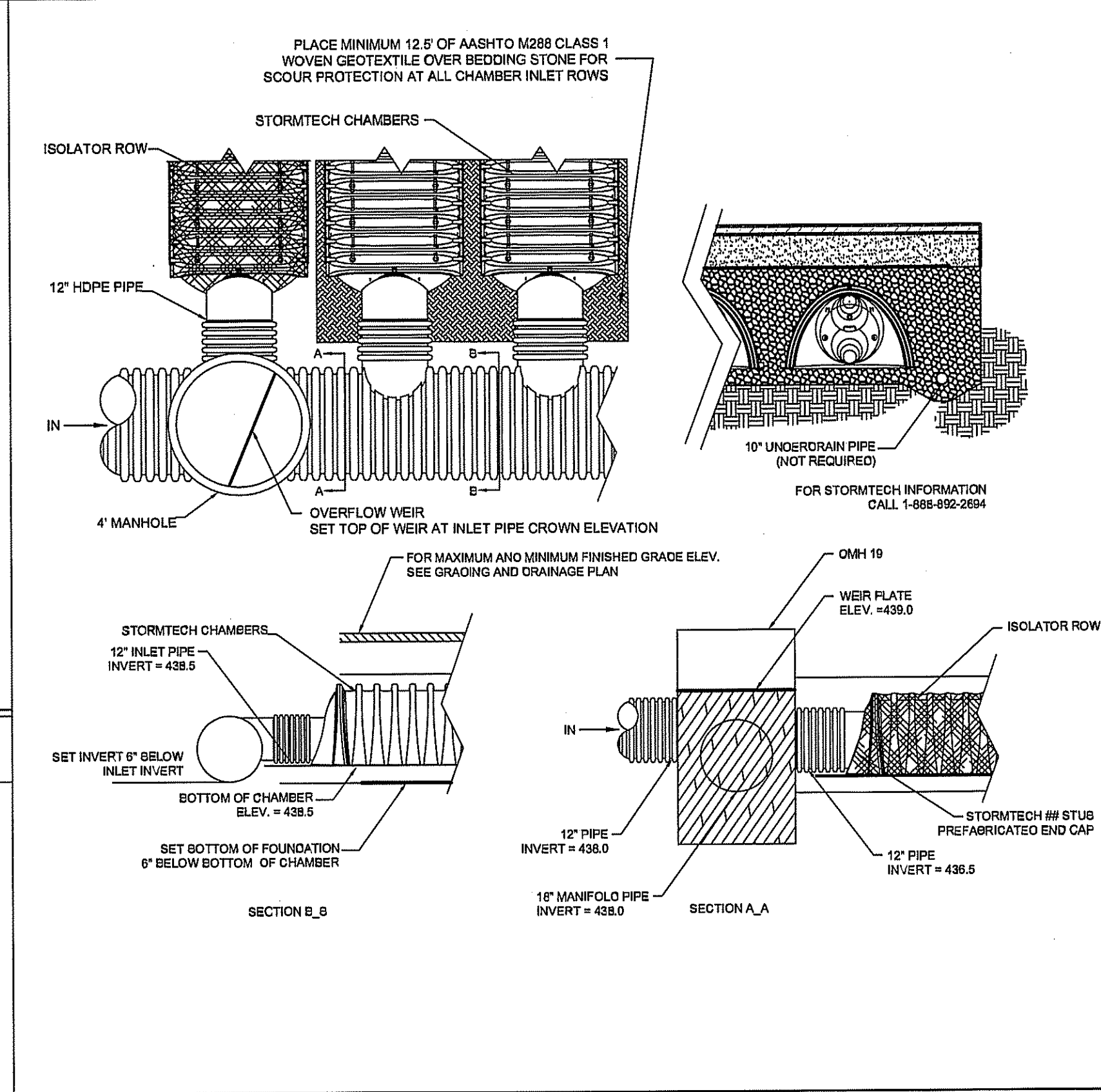
NOTES:
1. ALL DESIGN SPECIFICATIONS FOR STORMTECH CHAMBERS SHALL BE IN ACCORDANCE WITH THE STORMTECH DESIGN MANUAL.
2. THE INSTALLATION OF STORMTECH CHAMBERS SHALL BE IN ACCORDANCE WITH THE LATEST STORMTECH INSTALLATION INSTRUCTIONS.
3. THE CONTRACTOR IS ADVISED TO REVIEW AND UNDERSTAND THE INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLATION. CALL 1-888-892-2694 OR VISIT WWW.STORMTECH.COM TO RECEIVE A COPY OF THE LATEST STORMTECH INSTALLATION INSTRUCTIONS.
4. CHAMBERS SHALL MEET THE DESIGN REQUIREMENTS AND SAFETY FACTORS SPECIFIED IN SECTION 12.12 OF THE LATEST EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.



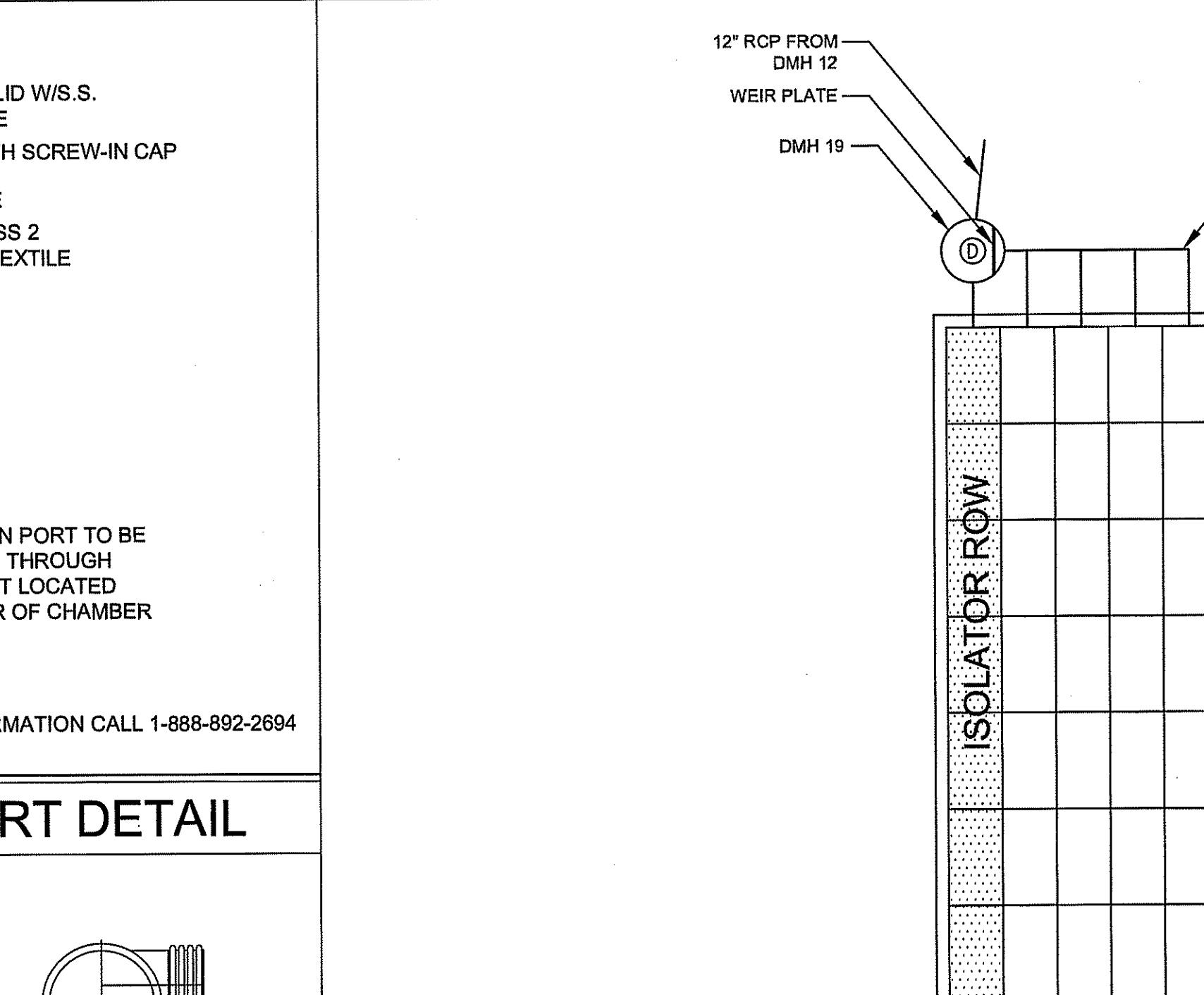
STORMTECH INSPECTION PORT DETAIL



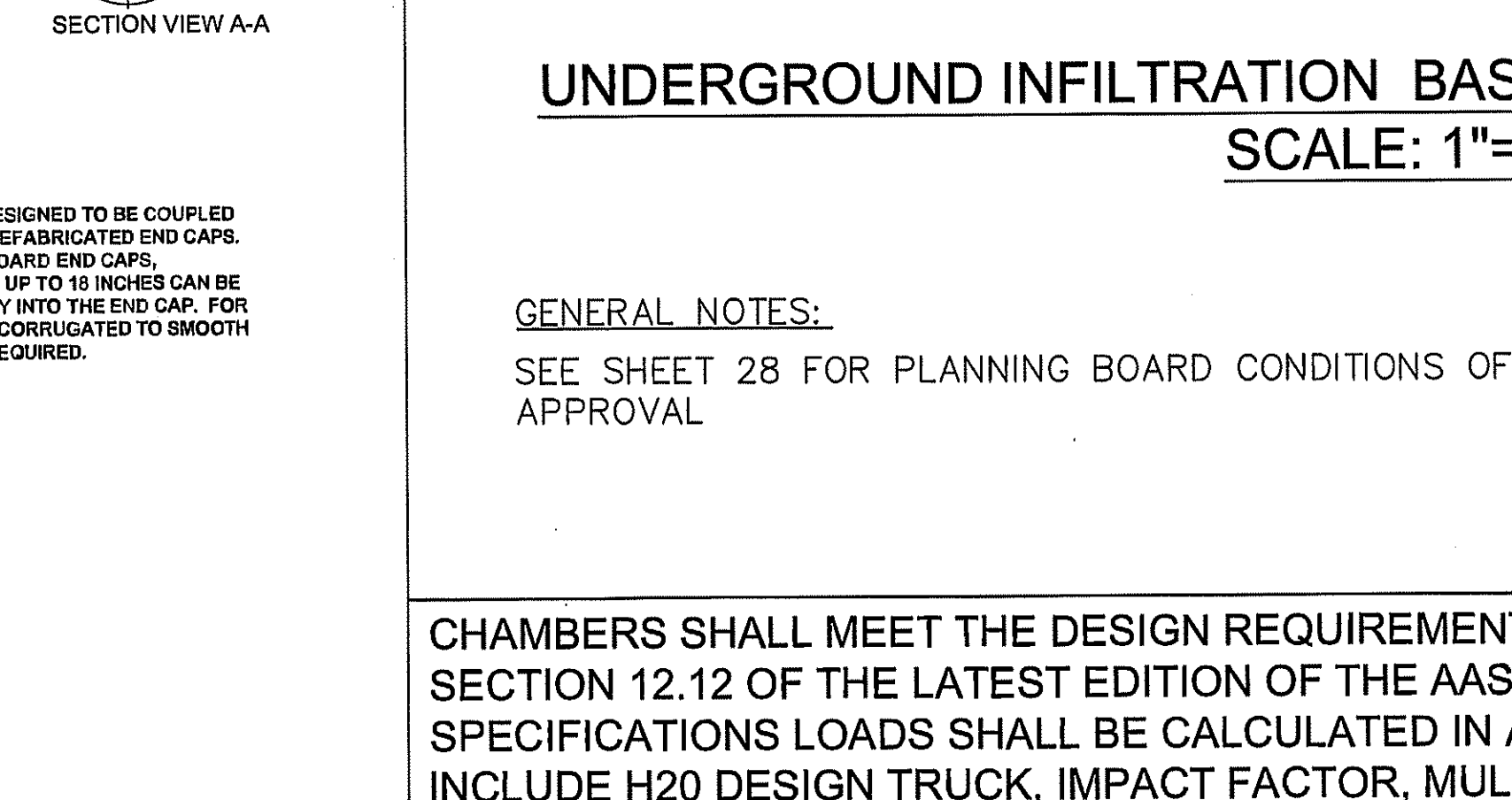
ADS MANIFOLD DETAILS



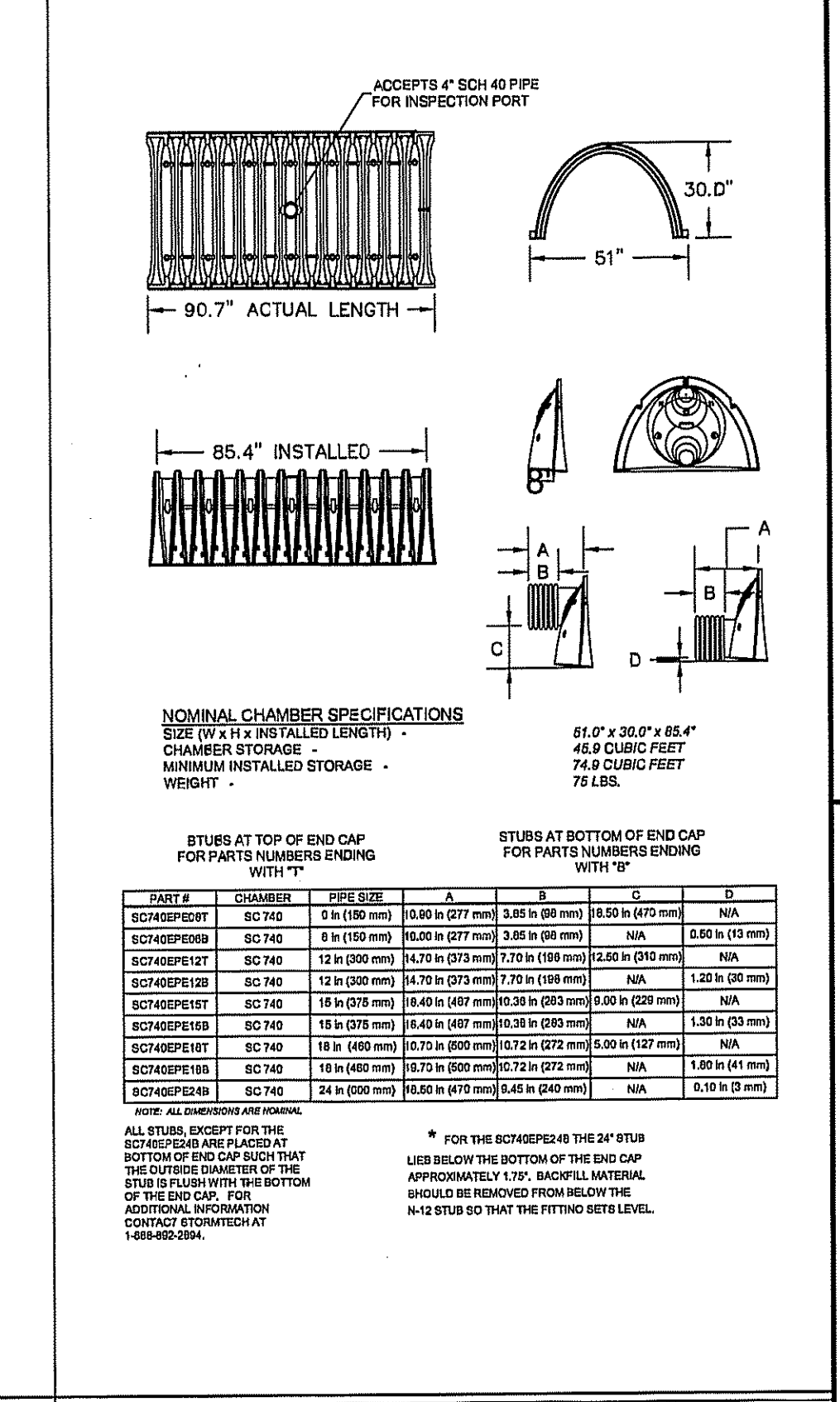
STORMTECH ELEVATIONS



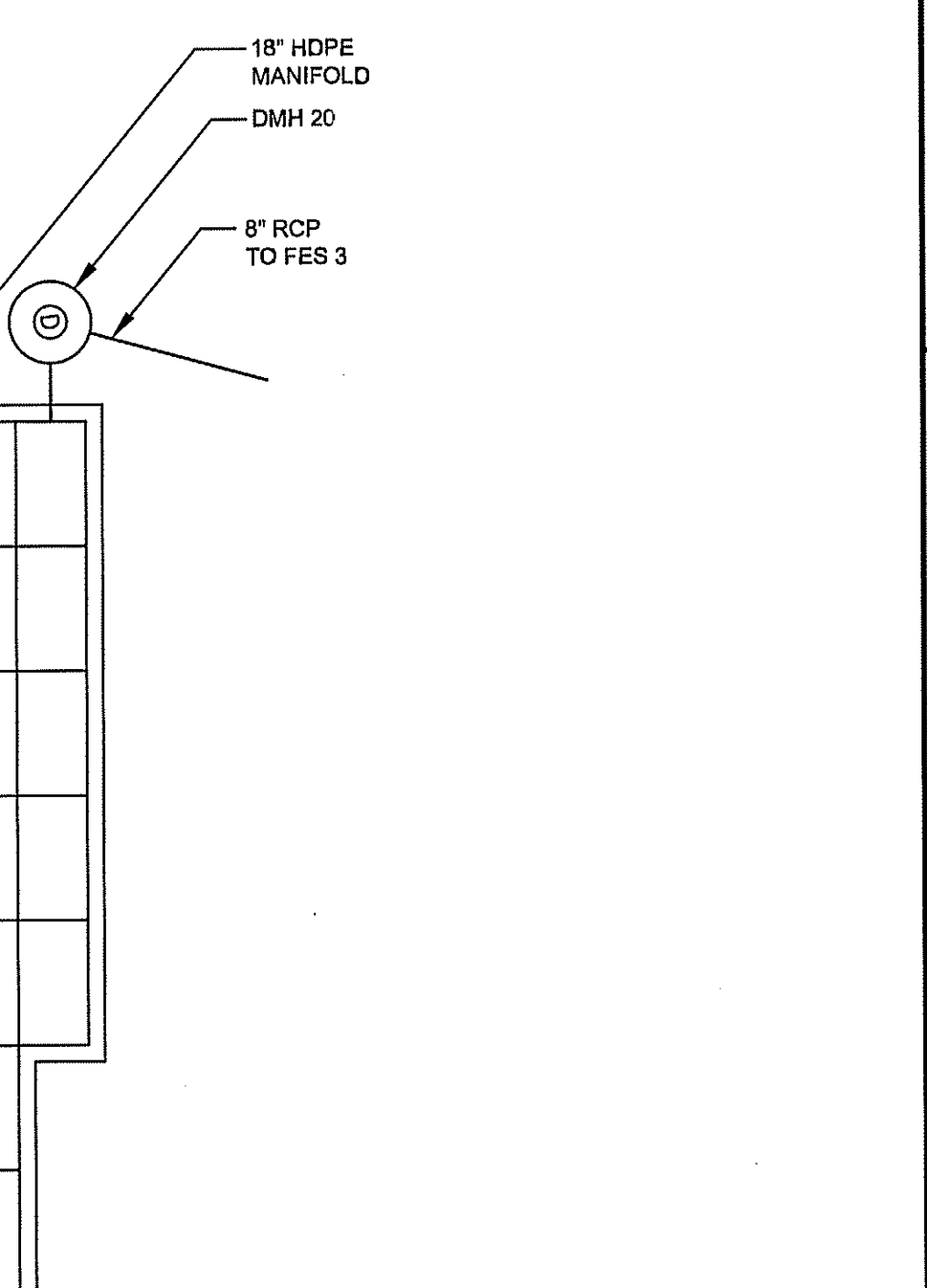
STORMTECH SC-740 CHAMBER LAYOUT



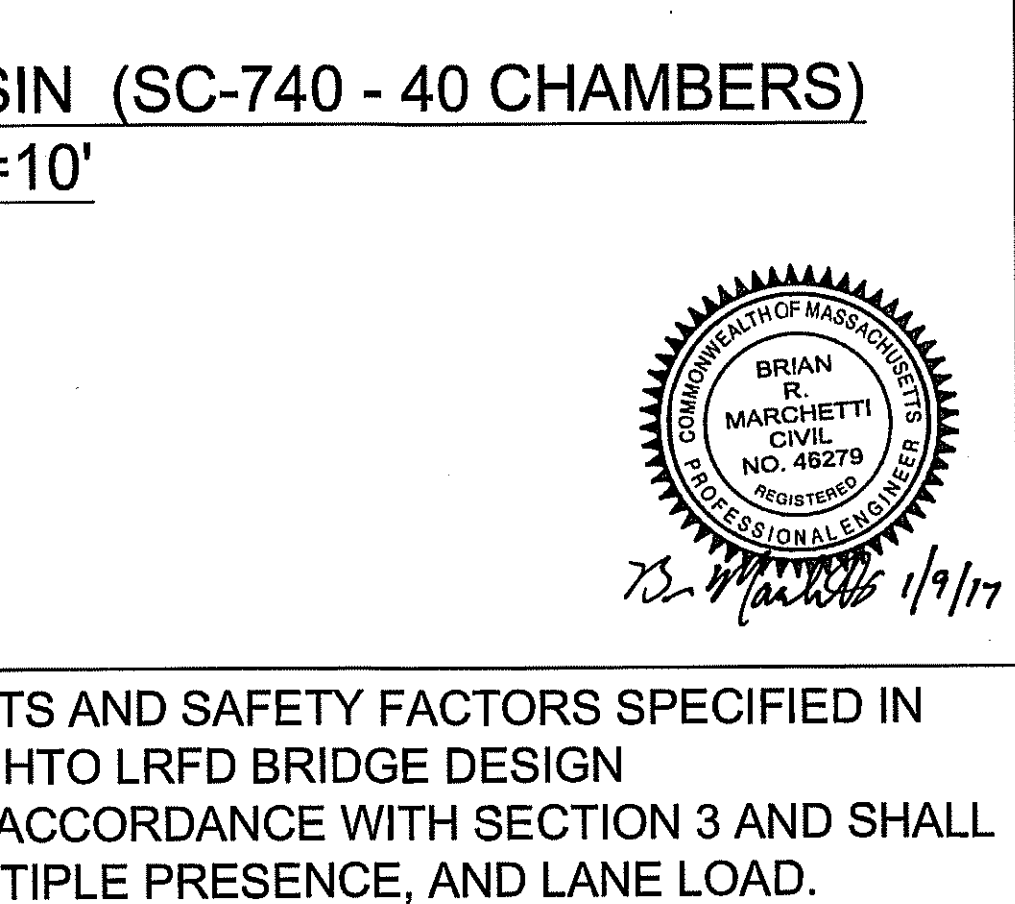
STORMTECH SC-740 CHAMBER LAYOUT



STORMTECH ELEVATIONS



STORMTECH SC-740 CHAMBER LAYOUT



STORMTECH SC-740 CHAMBER LAYOUT

StormTech
Detention • Retention • Recharge
Subsurface Stormwater Management™

PROJECT NAME
Estates at Bull Meadow
N. Grafton, MA 01536

This drawing was prepared to support the design engineer for the proposed conversion. It is the ultimate responsibility of the design engineer to ensure that the stormwater system's design is in full compliance with all applicable laws and regulations. It is the design engineer's responsibility to ensure that the StormTech products are designed in accordance with StormTech minimum requirements. StormTech LLC does not approve plans, sizing, or system designs. The design engineer is responsible for all design decisions.

REVISIONS	DATE
NO CHANGE	01/09/2017
TOWN COMMENTS	11/22/2016

DRAWING TITLE
Stormtech
Infiltration Basin
Details

STORMTECH SC-740 CHAMBER DETAIL SHEET

SAVED AS	CHECKED BY
066-CDT06	BRM

DRAWN BY	DATE
JLL	10/11/2016

SCALE	PROJECT NO.
NTS	066

DRAWING NO.	27 of 29
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STORMWATER MANAGEMENT OPERATION & MAINTENANCE PLAN:

1. PARTY RESPONSIBLE FOR OPERATION AND MAINTENANCE:

DURING THE CONSTRUCTION OF THE PROJECT, THE PROPERTY OWNER AND SUBCONTRACTORS ARE RESPONSIBLE FOR THE MAINTENANCE AND OPERATION OF THE PROPOSED SWM COLLECTION SYSTEM INCLUDING DEEP SUMP CATCH BASINS, WATER QUALITY UNITS, SEDIMENT FOREBAYS, ABOVE GRADE INFILTRATION BASINS, A BELOW GRADE INFILTRATION BASIN, VEGETATED SWALES AND RAIN GARDENS. UPON ACCEPTANCE OF THE ROADWAY, THE TOWN OF GRAFTON WILL BE RESPONSIBLE FOR MAINTAINING EVERYTHING PREVIOUSLY MENTIONED, EXCEPT THE RAIN GARDENS, WHICH WILL BE MAINTAINED BY THE PROPERTY OWNER OF THE LOT.

2. INSPECTION AND MAINTENANCE SCHEDULE:

THE TABLE OUTLINES THE INSPECTION AND MAINTENANCE SCHEDULE FOR THE VARIOUS ELEMENTS OF THE SWM SYSTEM.

SWM ELEMENT	INSPECTION/MAINTENANCE TASK	FREQUENCY
SWALE	INSPECT SLOPES	MONTHLY
	REMOVE SEDIMENT	ANNUALLY
CATCH BASINS	INSPECT STRUCTURE	MONTHLY
	REMOVE SEDIMENT	QUARTERLY
SEDIMENT FOREBAY	INSPECT STRUCTURE	MONTHLY
	REMOVE SEDIMENT	QUARTERLY
WATER QUALITY UNIT	INSPECT STRUCTURE	MONTHLY
	REMOVE SEDIMENT	QUARTERLY
ABOVE GRADE INFILTRATION BASIN MOW BANKS	INSPECT STRUCTURE	ANNUALLY
		BIANNUALLY
BELOW GRADE INFILTRATION BASIN MOW BANKS	INSPECT STRUCTURE	ANNUALLY
		BIANNUALLY
RAIN GARDENS	INSPECT STRUCTURE	ANNUALLY
	CLEAN SYSTEM/MOW	MONTHLY
	MULCH/FERTILIZE	ANNUALLY

3. ROUTINE AND NON-ROUTINE MAINTENANCE TASKS DETAILS:

WATER QUALITY UNITS AND DEEP SUMP CATCH BASINS

- INLETS / MANHOLES SHOULD BE CLEANED A MINIMUM OF FOUR TIMES PER YEAR AND INSPECTED MONTHLY.
- ALL SEDIMENTS AND HYDROCARBONS SHOULD BE PROPERLY HANDLED AND DISPOSED, IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL GUIDELINES AND REGULATIONS.
- STRUCTURES SHOULD BE INSPECTED AND MAINTAINED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION.

SEDIMENT FOREBAY

- THE FOREBAY WILL BE CLEANED FOUR TIMES PER YEAR AND INSPECTED MONTHLY.
- ALL SEDIMENTS AND HYDROCARBONS WILL BE PROPERLY HANDLED AND DISPOSED OF OFF-SITE, IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL GUIDELINES AND REGULATIONS.

AT GRADE INFILTRATION BASIN

- ONCE CONSTRUCTED, THE BASIN WILL BE INSPECTED AT A MINIMUM AFTER SEVERAL STORM EVENTS TO CONFIRM DRAINAGE SYSTEM FUNCTIONS, BANK STABILITY, AND VEGETATION GROWTH. PROBLEMS WILL BE ADDRESSED IMMEDIATELY.
- DURING THE FIRST SIX MONTHS OF OPERATION, THE BASIN WILL BE INSPECTED IMMEDIATELY AFTER SIGNIFICANT STORM EVENTS AND CLEANED TO REMOVE SEDIMENT BUILDUP.
- THE INLET PIPE WILL BE INSPECTED AND CLEANED OUT WHERE SEDIMENT APPEARS TO HAVE CLOGGED THE INVERT.
- A STAKE SHALL BE PLACED AT THE BOTTOM OF THE POND WITH MARKS AT 1" INCREMENTS TO MEASURE THE SEDIMENT ACCUMULATION. SEDIMENT WILL BE REMOVED FROM PONDS AT A MINIMUM WHEN ACCUMULATION IS AT 4" BUT AS OFTEN AS NECESSARY, AND AT LEAST ONCE EVERY 10 YEARS.
- AT LEAST TWICE DURING THE GROWING SEASON, THE SIDE SLOPES WILL BE MOWED, AND ACCUMULATED TRASH AND DEBRIS REMOVED. ACCUMULATED SEDIMENT IN FOREBAY WILL ALSO BE REMOVED AT THIS TIME

BELOW GRADE INFILTRATION BASIN

- ONCE CONSTRUCTED, BASIN WILL BE INSPECTED AT A MINIMUM AFTER SEVERAL STORM EVENTS FOR THE FIRST YEAR AND ANNUALLY THEREAFTER TO CONFIRM DRAINAGE SYSTEM FUNCTIONS AS DESIGNED. PROBLEMS WILL BE ADDRESSED IMMEDIATELY.
- SYSTEM SHALL BE CLEANED AS REQUIRED PER THE MANUFACTURER'S RECOMMENDATIONS.

VEGETATED SWALE

- ONCE CONSTRUCTED, THE VEGETATED SWALES WILL BE INSPECTED AT A MINIMUM AFTER EACH STORM EVENT DURING THE FIRST YEAR (ESTABLISHMENT PERIOD) TO ENSURE NO WASHOUT HAS OCCURRED. INSPECTIONS SHALL BE MONTHLY THEREAFTER. REPAIR ERODED AREAS AS NEEDED.
- AT LEAST MONTHLY DURING THE GROWING SEASON, THE SIDE SLOPES AND CHANNEL BOTTOM WILL BE MOWED, AND ACCUMULATED TRASH AND DEBRIS REMOVED.
- ANY COLLECTED SAND / SEDIMENT FROM WINTER TIME SANDING AND ROADWAY MAINTENANCE SHALL BE REMOVED ON A YEARLY BASIS.

RAIN GARDENS

- ONCE CONSTRUCTED, THE RAIN GARDEN WILL BE INSPECTED AT A MINIMUM AFTER EACH MAJOR STORM EVENT FOR THE FIRST YEAR AND ANNUALLY THEREAFTER TO CONFIRM SYSTEM FUNCTIONS AS DESIGNED. PROBLEMS WILL BE ADDRESSED IMMEDIATELY.
- RAIN GARDENS SHALL BE INSPECTED MONTHLY FOR TRASH REMOVAL.
- BANKS OF THE RAINGARDEN SHALL BE MOWED MONTHLY AT A MINIMUM.
- AT LEAST ONCE A YEAR, RAIN GARDENS SHALL BE MULCHED, FERTILIZED AND PRUNED AND ALL DEAD VEGETATION REMOVED AND DISPOSED OF.

NOT FOR CONSTRUCTION

THESE PLANS WERE PREPARED FOR THE PURPOSE OF OBTAINING STATE AND LOCAL PERMITS AND ARE NOT INTENDED TO BE USED AS CONSTRUCTION DOCUMENTS.

PREPARED FOR:
BULL MEADOW, LLC.
2 RACHEL ROAD
BOYLSTON, MA 01505

No.	Date	Revision



Drawn By: BRM Designed By: BRM Checked By: ZSM

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Project Name

Estates at Bull Meadow
Definitive Plan
N. Grafton, MA 01536

Sheet Title

O & M
Plan

Job No: 066 Sheet No.
File Name: 066P-NOTES01
Date: January 9, 2017 28
Scale: NONE OF 29

